FORESTRY

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PENNSYLVANIA Game News

February 1945

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PENNSYLVANIA GAME NEWS

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THE MERGER of the Game, Fish and Forestry Departments in Pennsylvania has been the subject of a great deal of discussion. Those who favored a three-way consolidation apparently have abandoned the idea of combining Forestry with the other two, which is as it should be.

Governor Martin in his message to the opening session of the 1945 General Assembly said: "In order to simplify and economize in administration it has been suggested that the Fish and Game Commissions be consolidated." The Governor made no specific recommendation, but laid the matter before the Legislature for its consideration.

The recommendation for consolidation of these Commissions was made by a special committee, appointed by the Governor, after an extended study of all State agencies to determine how the business of the Commonwealth might be administered more efficiently and economically, and especially to assure greater benefits to both the hunters and the fishermen.

Those who favor a merger of the Game and Fish Departments point out that both would derive considerable benefit from the knowledge and experience of each other's personnel, that a coordinated program with uniform policies would be developed, and that the substantial savings resulting from a consolidation of the various services could be devoted to more fish and game for the sportsmen.

They state a unified field force would provide much better service during both the hunting and fishing seasons; that the Fish Wardens would benefit by receiving the higher average rate of compensation paid Game Protectors, together with annual salary increments for meritorious services and opportunities for advancement, as do our officers; and that a better magazine could be published if the *Angler* and the *Game News* were to be combined, and the best features of both retained.

It is also claimed that public demand will soon compel the Fish Commission to establish a land purchasing department to acquire extensive public fishing waters. If the two agencies were merged, only one such unit would be needed, producing additional future economy.

There would seem to be only one logical way to effect such a consolidation, which is to merge the two agencies, with a clear-cut stipulation that the Fish Fund and the Game Fund be kept separate and spent only to benefit the contributors to each. If this is ever to be done, now may be the time, when the *entire* paid personnel of both departments could be retained and used to the advantage of everybody concerned.

The Members of the Game Commission *are not* advocating any such consolidation, neither are they opposing it. This is a matter to be decided by the sportsmen who buy the hunting and fishing licenses. We shall try to keep you advised of Legislative developments.

The sportsmen of Pennsylvania have a right to know we are maintaining a neutral attitude in this matter. We have always proceeded on the theory that they should be kept fully informed as to our actions. In that connection there will be found in this issue of the *Game News* a digest of the business transacted at our meeting in January, an innovation which will be continued in the future.

ROSS L. LEFFLER,
President.

WELL WHAT'S WRONG

1.

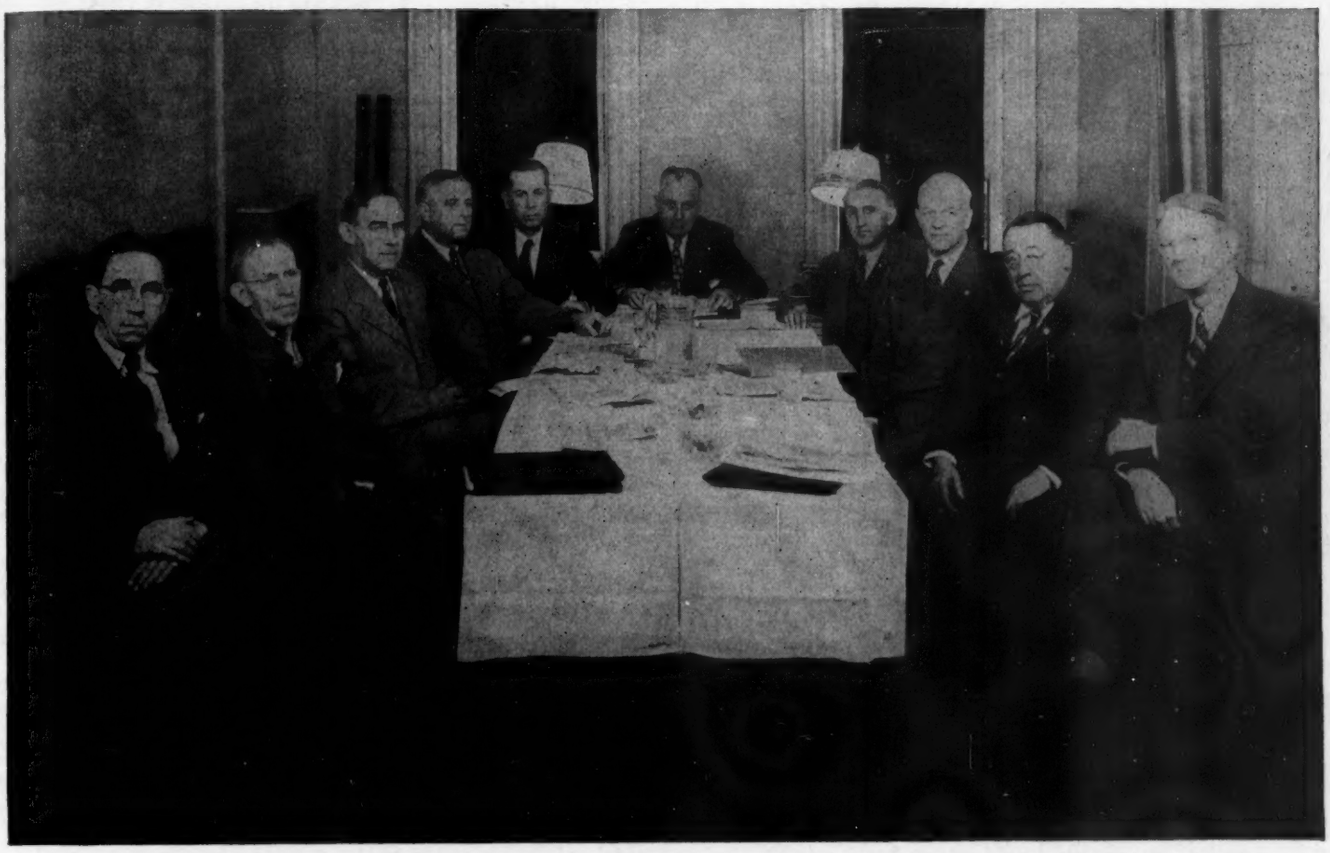
2.

3.

4.

JACOB
BATES
ABBOTT

If you are not sure look on page 32.



Members of the Commission, its Administrative Officers and Recording Secretary in session last fall at Meadville. Left to right: T. W. Minahan, Recording Secretary, Commissioners Dr. H. E. Kilgus, G. I. Phillips, Harold Moltz, Robert Lamberton, Vice President, Ross L. Leffler, President, Seth Gordon, Secretary to the Commission and Executive Director, Commissioners John C. Herman, Dr. Carl B. Rosenkrans, and R. A. McCachran, Assistant Director.

HOW DOES THE GAME COMMISSION FUNCTION?

By Ross L. Leffler*

QUITE frequently questions are raised concerning the various phases of the work of the Game Commission, particularly the procedure employed in determining policies and how it arrives at the methods to follow in the development of the many programs and activities of the Commission. All of these inquiries can be summarized under the one heading "How Does the Game Commission Function?"

The Pennsylvania Game Commission is comprised of eight citizens of the State who are appointed by the Governor, by the advice and with the consent of two-thirds of all the members of the Senate. The Commissioners, who must be well informed on the subject of wildlife conservation and restoration, are selected to represent the various geographical sections of the Commonwealth. It must be remembered, however, that while the Commissioners are selected from various geographical locations, their responsibilities are nevertheless statewide. They receive no pay for serving on the Game Commission, even though their duties require much of their time and, in many cases, the expenditure of their own funds.

The Commission meets at regular periods throughout the year, with the dates and places for holding the meetings optional, except in January and July. These two meetings must be held at the State Capitol. It has been somewhat customary in the past to hold quarterly meetings, but recently they have been called every two months in order that the members may be kept more conversant with the many problems which are arising constantly.

Occassionally meetings are held elsewhere than in Harrisburg. This procedure affords an opportunity for the Commissioners to inspect the various State Game Lands; to familiarize themselves with the type of lands and observe the various projects existing thereon; and discuss future work which may be contemplated for the improvement of the lands. It also enables the Commissioners to broaden their general knowledge of statewide conditions, to make the acquaintance of sportsmen's groups throughout the State, and to exchange their respective ideas and thereby develop a mutual understanding and broader viewpoint.

The sources are manifold from which the Commission receives suggestions and derives information and data whereby it formulates the various conservation policies and programs. In addition to their own broad knowledge, the Commissioners obtain information from employees, both office and field; sportsmen and sportsmen's groups; experts in the various fields of conservation; and numerous other sources.

The individual employee is urged to present any ideas he may have which will contribute toward the improvement of any activities of the Commission. During the past year suggestions were submitted by practically every employee, some of which are now in effect and many others will undoubtedly be adopted later on.

Each member is considered by the sportsmen in his respective territory as their personal representative, and it is to him that many of their problems are brought. This constitutes a most important source from which every Commissioner obtains explicit knowledge of the conditions in his home region, and frequently suggestions for their

(Continued on page 24)

* President, Pennsylvania Games Commission.

The ringneck can stand a lot of hunting pressure.

WILDLIFE MANAGEMENT WITH EMPHASIS ON THE RINGNECK PHEASANT

By P. F. English*

Photos by W. L. R. Drake

IT has been only in recent years that game or Wildlife Management has been given a place with other farm and forest management practices. In olden times it was not necessary for our grandfather to think in terms of management because more game was produced in the wild each year than was harvested by the landowners.

We need, however, just to look around us to see the changes in earlier natural conditions which have been brought about by man's numerous activities. Many of these changes have been harmful to wild creatures, and if we who enjoy hunting and fishing wish to continue this form of recreation, we must restore their natural homes so they will increase and be as abundant as they were in the past.

Wildlife management then is a term which means managing our lands and waters in such a way as to produce a harvestable crop of the various game species. The question arises, however, can these species be managed profitably on land which must be used primarily for agriculture? The answer is YES.

In order to bring wild animals under management, we must place them under control either by fencing or otherwise controlling their movements. The latter method should be one objective. The movements of wild animals are determined by natural conditions such as year round food supply, places for protection, suitable localities where they can rear their young, year round cover, balance between game and predatory species and managed hunting (harvest of the surplus).

In other words wildlife management must be based on an exact knowledge of the habits of the animals (life history), and consists in manipulating conditions so as to direct the activity and control the inter-relations among wild creatures.

"Wildlife" is a term which includes more than small game animals, pheasants, squirrels and rabbits. For convenience let us group them as follows:

1. Songbirds, meaning the insect and seed eating birds.
2. Predatory birds—hawks, owls and sometimes crows.
3. Fur-bearing animals—the skunk, weasel, mink and raccoon.
4. Small game mammals—the squirrels, woodchucks and rabbits.
5. Game birds—ducks, and other waterfowl, pheasants, quail, grouse, Hungarian partridge, wild turkey and migratory shorebirds.
6. Rodents, or the small harmful mammals —mice, rats, and some squirrels.
7. Predatory mammals—or those animals which feed upon other animals.
8. Big game mammals—bear and deer.

Wildlife management on a farm has much wider implications than one might at first expect, and many parts of the problem must be considered. Some of them are:

1. Insects in relation to crops and stock.
2. Insects and the birds that feed upon insects.
3. Insect-eating birds and the animals which feed upon them.
4. Birds which destroy crops.
5. Game animals and the sportsmen.
6. Mammals which destroy crops.
7. Fur-bearing mammals.
8. Fur-bearers and poultry.
9. Increased game and the crops.
10. Game birds and the animals that feed upon them.

This list indicates the complexity of the problem and provides one explanation of why wildlife management on agricultural lands is a complicated undertaking.

In Pennsylvania our principal game on farms are the ringneck pheasant, the cottontail, the woodchuck and the bobwhite. Perhaps the cottontail stands the greatest brunt of the hunting.

In the discussion that follows I shall allude mainly to the ringneck pheasant but want you to understand that any improvements we may make for pheasants fit in very handily for the cottontail, so that pheasant management also means cottontail and other farm-game management.

In any project of wildlife management, we should consider every phase of the various inter-related problems, and above all, *we must continually keep in mind that the primary object of the farm is to produce revenue from crops and stock, so that the management of wildlife must be considered as secondary, and supplementary to crop and stock production.* If the farm land is State-owned then the Commission could farm it with wildlife management being given precedence.

Getting Down to Facts

A few outstanding facts that should be summarized before we undertake to outline a method of procedure for a management project.

1. *Pheasants, squirrels, woodchucks, quail* and *cottontails* are the *game species* to be especially considered on the *farm lands of Pennsylvania.*

2. Skunk, mink, raccoon, muskrat, red fox and opossum are the principal fur-bearers.

3. Rodents, such as mice and rats, may become an economically dangerous group if their natural enemies are destroyed.

4. Of all the animals, insects are the most critical source of damage.

5. Insect-eating birds are undoubtedly our greatest asset.

* Department of Zoology and Entomology, The Pennsylvania State College.

Herein are a few outstanding facts that should be summarized if the ringneck is to be managed properly

Management of game species must be so conducted as to encourage the valuable assets and discourage the dangerous features. For the sake of simplicity, our discussion will here be confined to the pheasant. That which is said will, however, hold equally well for our insect and seed-eating birds—in fact the improvement principle is applicable to all species.

Let us now summarize the points in the life of the pheasant to which we need to give special consideration.

1. The pheasant requires assistance every month in the year, not primarily during the winter months.

2. There are several outstanding movements which the pheasant makes each year. *First*, starting in the spring, the birds leave the grounds where they have wintered in comparatively large groups, and in pairs, or trios seek nesting grounds. They first select a territory which one cock protects against the invasion of all other cocks. Here they nest, and bring off their young. They usually remain in this locality, which is called the crowing area.

The *second* movement or series of movements comes when haying operations lay the fields bare and when the females with their young are forced to move out. They usually come back with the growth of the second crop, however. This series of movements continues until they are finally forced into the grain and corn on the final cutting.

The *third* movement comes with the combined harvest and hunting season when the pheasants seek dense cover as is available.

Numerous observations by the writer of winter concentrations show they tend to spread rather uniformly in the spring, therefore we do not find spring, summer and fall concentrations like those of the winter period.

The above illustrates the general movements which we must consider throughout the year, but there are certain dangers connected with each. These are:

1. The natural crowing areas which may occur on 640 acres of general farm territory may number only 10, or one to 64 acres. This means that the mates of only one cock will nest on each 64 acres, while the winter cover perhaps took care of three times this number of birds. Therefore, two-thirds of the winter population might be forced to leave that section to find suitable crowing and nesting areas.

2. There is the possible danger that birds may be forced to select sites for their nests in unsuitable places, where the early nests would be destroyed by the spring floods, and the later nests would be subject to destruction by mowing machines, or the nests might be placed in sites providing insufficient cover to protect them from crows.

3. Flocks well established in their territory may be driven out of the area during the haying season never to return, and thus may be lost through improper provision of cover.

4. Flocks left on an area with a minimum cover to protect them might fall victims to predators which would not develop a taste for game birds except through an unfortunate condition which left the birds frequently exposed.

5. After the grain and corn have been cut in the fall, birds are forced to find other protection such as marsh or other herbaceous cover, and they require lanes of cover leading from the stubble and cornfields to such protective cover. If these are not provided they may leave the area entirely and take up winter quarters elsewhere.

6. During the hunting season it is desirable to take advantage of the natural segregation which occurs. The females seem to seek the cover ahead of the cocks, which are more frequently found along fencerows and brushy areas. We must develop an abundance of cover all over the areas, allowing for sections where the cocks may be hunted, and conserving at least a part of the marshes and other winter cover as protected areas where the hens may remain unmolested. Such a system would greatly intensify the sport of pheasant hunting by adding the expectancy factor which is so desirable.

So much for the control of the seasonable movements of the pheasants. Keep in mind that to a considerable degree cottontails, bobwhites and insectivorous birds will also be assisted by such methods.

Food and cover must be balanced throughout the year if birds are to be maintained in anything like maximum abundance. An abundance of food may actually prove a detriment in a program of management if suitable winter and spring cover is not available, for an abundant supply of fall food may cause the birds to become settled in an inadequate cover where their exposure may cause suffering and heavy losses. If winter cover and food are provided without suitable spring food and cover, then the birds may be lost to the area before the young are produced.

The pheasant is a bird which follows a rather fixed routine and usually his route for the day is along byways provided with suitable concealment from enemies and shelter from storm and wind. It is usually only when forced through urge of hunger that pheasants leave their sheltered paths. Therefore, food should be made available along their natural routes, or special byways should be prepared which provide both food and cover.

A series of foods should be afforded them in order to meet the demands of early fall, mid-winter, and finally spring, for the birds accustomed to a certain route should not be forced from it.

When artificial feeding must be resorted to, it is probably advisable that the establishment of feeding stations should be based upon a knowledge of the route followed by the birds, and several stations should then be placed along their paths, rather than force the birds into new positions not particularly adapted to their safety.

The pheasant is a bird which seems to demand and to take a great variety of foods, and daily travels long distances during good weather to obtain this variety. Therefore, it would seem advisable to provide a variety of planted foods, dispersed over a considerable area, rather than provide an abundance of food of one kind in any one place. It is certain that formulating a plan to meet requirements of the pheasant, and especially the establishment of an ideal area on agricultural land, is exceedingly involved. Probably the ideal can only be approached. It must be remembered at all times that pheasants are creatures that do best on our best farm lands and are not adapted to regions of the state where the soils are in the poorer classes.

The following vines along fencerows and other suitable places are of use in providing food and cover: nightshade, bittersweet, wild grape woodbine, and honeysuckle.

Many of the following wild shrubs provide food and cover during various times of the year: wild rose, sumac, elderberry hazlenut, the dogwoods (panicled and red osier), nannyberry, interberry and others. Trees are also beneficial for cover and food. Young evergreen plantings make good cover when in small blocks.

Low-growing deciduous trees like flowering crab, mulberry, flowering dogwood, serviceberry, hawthorne, and others provide foods in season.

Nut trees such as oak, beech, butternut, black walnut and hickory are desirable.

Fruit trees such as apple, cherry and plum also provide food.

The following seed-producing herbaceous plants (weeds) provide food for the pheasant and quail: ragweed, foxtail, bindweed, smartweed, pigweed, burdock, and many others are used.

Most any cultivated crop produces in har-

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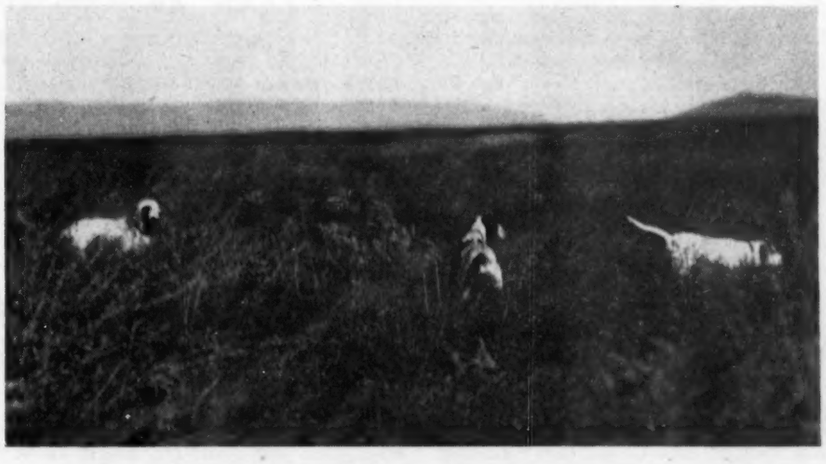


Triple "point."

"Whirling in between buildings on the hill."

CITY SLICKERS

Country-bred Americans Abandon the Woods for the Big Towns

By JACOB BATES ABBOTT
Illustrations by the Author

YOU remember the popular song of the last war which began: "Howya gonna keep 'em down on the farm after they've seen Paree?" This academic question seems to apply to several varieties of wildlife which persist in living around metropolitan areas. Strangely enough, too, some of these species are among the rarer and wilder of our native birds: duck hawks, sparrow hawks, barn owls, nighthawks, gallinules, least bitterns and grebes.

What do you think of hawks nesting in a broken gutter atop a building at one of the busiest intersections of downtown Boston? Of the shy and seldom-seen Florida gallinules and least bitterns nesting in a muddy slough, about as large as the shadow cast by a freight car, within the sprawling city limits of Philadelphia, practically in the yards of one of the largest and most active power plants in the city?

I suppose the classic example of wildlife in the city occurred when a returned reveller arose shakily one morning and, holding his head and groaning pitifully, went to the window to see if the day was worth living through. As he looked out his eyes bulged with horror and a wild moan escaped his lips. There was an elephant in his back yard! Spasmodically shutting his eyes to black out this awful vision, he groped for his clothes and rushed out the front door to sign the pledge. Later in the day he discovered, to his disgust, that a circus train had been derailed near town, that a number of animals had escaped and that there really WAS an elephant in his yard. I believe, though, that the pledge held—he had been badly frightened.

Lucky for him that he had not the experience of a South Philadelphia lady of a few years ago. It was early spring and she had gone out to her tiny back yard to do a bit of raking. To her infinite surprise (and, I imagine, considerable fright) she saw a large snake occupying most of the yard. It looked like a boa constrictor to her, but they are hardy folk in South Philly. Gripping her rake, she courageously beat the life out of this serpent which had invaded her Eden. The story got in the papers, naturalists investigated and it proved to be a five and a half foot pine snake, whose northern range should be the pine barrens of south-central Jersey. How it got to South Philadelphia no one knows, but it is now preserved for posterity, well-pickled in alcohol, among the archives of the Academy of Natural Sciences in Philadelphia.

Philohela minor, that whistling-winged bird of mystery—even his name breathes the air of the wildest wet woodlands— is one of the least understood of our game birds. The woodcock's nuptial sky dance, a dark, spiralling silhouette against the fading orange of the evening sky is a sight long to be remembered. Now why should one of these timberdoodles decide to fly up Beacon Street in Boston one early evening, whirling in between buildings on the hill? True the Somerset Club was near, but within those hallowed walls woodcock were served on platters rather than greeted as visitors. If you think that the somnolent calm of Beacon Street may have been reminiscent of quiet woods, let's get closer to the city's center. What about the woodcock that was seen spiralling in and out of Bromfield Street from the Old Granary Burying Ground? This is adjacent to Boston's most bustling shopping district. And these same long-billed timber-bugs have been noticed flying against shop windows on Fifth and Madison Avenues in New York. Here you have one of the woodland's shyest residents actually shopping (if I may be permitted) on a couple of the most crowded streets in America. How come? I can't answer it, but the facts are recorded.

A pair of fish crows, which should have been down along the Jersey coast, nested and reared young in the Parkway opposite the Academy of Sciences in Philadelphia a few years ago. This parkway is one of the main arteries for motor traffic into the city and thousands of cars use it daily. Again,

"Red fox captured in a tree."

how come? Certainly those crows had free choice of a homesite. They must have PREFERRED urban dwelling.

The duck hawk, black-mustached pirate of the skies, and one of the wildest and most rarely seen of our raptores, nesting usually on some inaccessible cliff remote from man's habitation, still has its home in the Palisades of the Hudson a few miles from Manhattan. It often appears in New York City, slashing through the flocks of pigeons which infest City Hall. Imagine this buccaneer of the wilderness sweeping a few hundred feet over the roaring maelstrom of metropolitan traffic.

A year or so ago one of these falcons lived royally on the City Hall pigeons in Philadelphia. He became so well-known that he was photographed on a building ledge by a Bulletin newsman and his portrait made the front page of the second section of the largest evening newspaper in America. (advt.)

I saw an adult peregrine wheeling above the spire of the Church of the Advent in Boston a few falls ago—a splendid, scimitar-shaped silhouette with the buff and black barring distinct under the blue October sky.

It is strongly suspected that a pair of duck hawks nested high in the superstructure of a Harrisburg church early last spring. This year the suspicion will be confirmed and, if true, may be the first recorded nesting of these bold falcons actually within the limits of a big city.

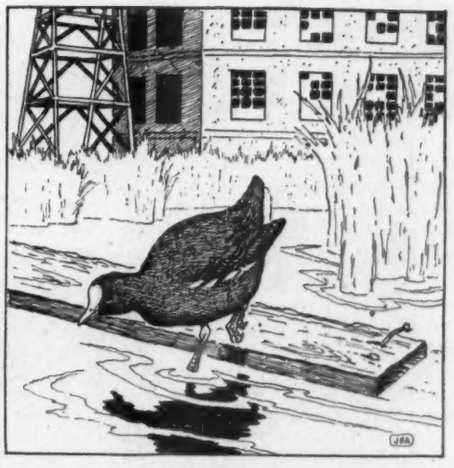
Just to give a couple of instances of citified barn owls I refer you to page 16 of the December 1944 issue of GAME NEWS and to the fact that a pair nested for several years in one of the government buildings in Washington.

Although I had studied and chased birds in the field for more than ten years it was only seven years ago in March that I saw my first barred owl; and I was wet to the waist from plowing through an icy Massachusetts swamp to accomplish this. Yet recently one of the editors of a Boston sportsmen's magazine was strolling up the middle walk of that city's Commonwealth Avenue, thinking about whatever editors do think about, when he was awakened by raucously scolding crows. He looked up and saw the four foot wing spread of a barred owl as it took off from a bare elm and flapped slowly up the street!

1916 was twenty-nine years ago and American egrets were a great deal more rare then in the north than they are now. They had been nearly exterminated on their Florida and Louisiana breeding grounds by plume hunters until the Audubon Society stepped in and, with the hardly-won aid of Federal legislation and of resident wardens, saved the remnants of the beautiful white herons. Their wraith-like beauty exhales the very essence of the cypress swamps and tropical lagoons which are their home. Because, through protection, egrets have tremendously increased and extended their range northward they are now not uncommon sights along Pennsylvania and New Jersey waterways. But in 1916 an American egret north of the Carolinas was startling. Imagine, if you will then, three of these ghostly wanderers from the southland calmly living for several days near a New York City subway station! In July of that year three egrets appeared in a small swamp near the Van Courtlandt Park subway entrance and, undaunted, were viewed by crowds. They became accustomed to the roar of traffic and were eagerly photographed by wondering ornithologists.

It seemed a jest of nature that these rarest of avian stragglers to our northern states should stand around for days close to hurtling trucks and taxis and thousands of hurrying commuters.

Although newspaper articles are, generally speaking, notoriously inaccurate when reporting nature items (viz: eagles carrying off babies after battling parents, etc.) here are a few records which have been carefully checked.



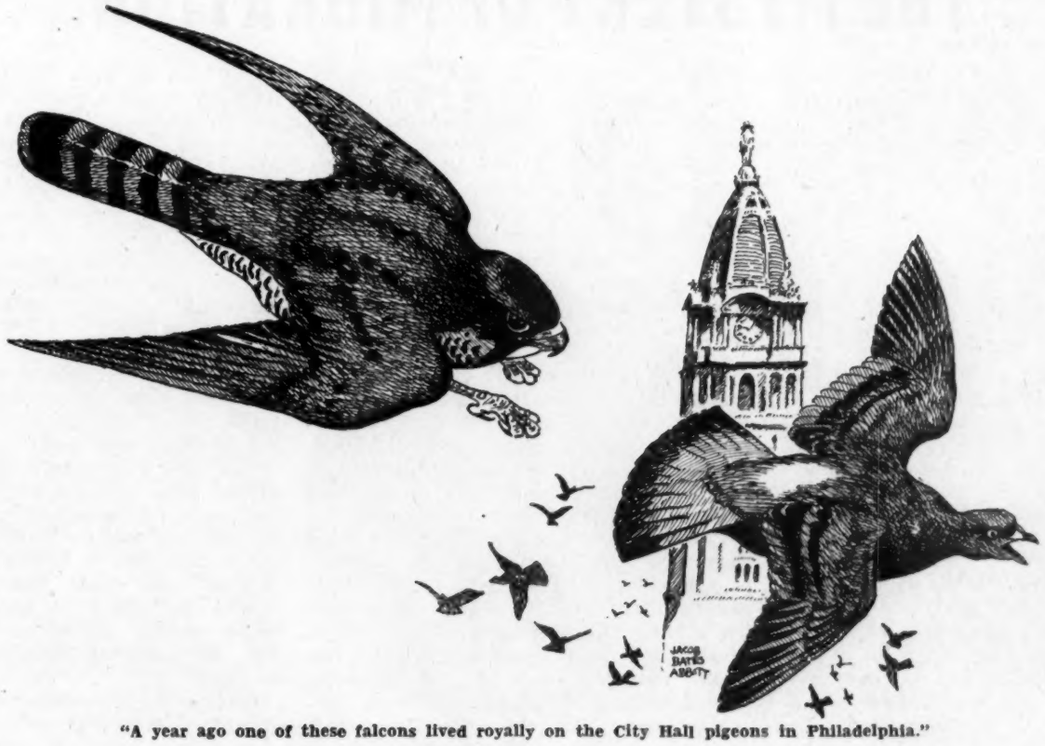
"The shy Florida Gallinule nesting within a muddy slough within the city limits."

Hollywood, 1931—Baby Quail Halt Rehearsal; Mother Pursues Youngsters Who Fall On Stage of Pilgrimage Play.

"Distress of an alarmed feathered mother yesterday temporarily broke up a rehearsal of the Pilgrimage Play in its picturesque theatre in Hollywood. Four tiny baby quail, so newly hatched their feathers were still moist, fell from their nest to the stage and the mother bird came to their rescue with frantic calls of distress. The players halted rehearsal while one of them replaced the chicks in the nest."—*Los Angeles Times.*

Lynn, Mass., Aug., 1936—Exhausted buck deer rescued by two fishermen as it was swimming between Lynn Harbor and Nahant.

(Continued on page 32)



"A year ago one of these falcons lived royally on the City Hall pigeons in Philadelphia."

Photos courtesy U. S. Fish and Wildlife Service.
The seal trade is dependent upon a seasonal migration.

THE MYSTERY OF MIGRATION

WHY DOES one bird fly from the Arctic to the Antarctic and back again every year—a distance almost equal to that of the earth's circumference—while another spends its whole life around a small copse, never venturing more than a few yards beyond its confines? Why do birds set out from New Zealand acrosss hundreds of miles of landless ocean and, after spending a few months in Australia, fly all the way back again? How do golden plover from Alaska find their way every year to the tiny islands of Hawaii in the limitless Pacific? What induces eels, after years of complacent puttering in European ponds and streams, to change their color, go down to the sea and swim thousands of miles across the Atlantic to lay their eggs. and, still more baffling, why should their tiny, fragile offspring spend three years struggling back along the same hazardous path while billions drop by the wayside?

The whole business of migration is one gigantic question—one of the greatest in nature. It is even a question as to whether we know the answer, for we cannot be sure that all the incredible facts we have now gathered about this extraordinary phenomenon add up to an explanation. The migration of animals has been observed by man for thousands of years. Early hieroglyphic writings of ancient Egypt record the seasonal arrival of the cranes, and the Greeks frequently chirrup in their odes about the sudden comings and goings of the swallows. Ancient Indian literature notes the disappearance of many creatures at the onset of the summer heat, and the Romans added their apparently logical, but totally inaccurate, explanations of these periodic disappearances of wild life.

The Romans started many fallacies about migration—fallacies which persisted until recent times, and even still persist in out-of-the-way places. The ancients had a simple, peasant understanding of nature, but the Romans, and, after them, our own ancestors, with a growing interest in the complexities of existence, resorted to quite unnecessarily fantastic interpretations of what they saw. Before the rebirth of science two centuries ago, the western world still believed that swallows hibernated in the mud at the bottom of lakes. It took many years to convince people otherwise, as is demonstrated by quite recent testimony asserting that swallows were actually found in cakes of mud.

After modern scientific investigation had shown that the birds which disappear from northern climes in the fall go to the tropics, and that migration is a natural habit common to a great part of the animal world, a confusion of quite another kind arose. All over the world, men had from time to time encountered vast armies of animals advancing across the face of the earth in countless millions, often without apparent cause. Many of these mass movements were of such proportions as seriously to interfere with man's way of life.

The commonest example is probably the locust, a perennial scourge in many warmer lands, which has alarmed and mystified humanity since the dawn of history. One swarm which was scientifically investigated in the Red Sea covered an area of 2,000 square miles and the estimated weight of the insects that composed it—worked out at an average of one sixteenth of an ounce per insect—amounted to 42,850,000,000 tons. Yet another, even larger swarm passed over exactly the same route next day, the combined swarms said to have totaled more than the weight of Manhattan Island above sea level.

Other mass movements, though less frequent, are almost as well known. In the

By Ivan T. Sanderson

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north of Canada and in Norway, vast hosts of little, almost tailless, ratlike animals known as lemmings, pour down from the barren uplands from time to time and, after crossing the coastal plains, plunge into the sea and disappear. In South Africa, herds of delicate little antelopes known as springbok, pressed shoulder to shoulder and reaching in all directions as far as the eye can see, suddenly make their appearance and likewise plunge to their destruction in the sea. These unexpected eruptions of animal life occur in almost every country. I once walked for an hour through a continuous carpet of little hopping frogs in the grass fields of West Africa, and, while living in the jungles of South America, we became used to a never-ending succession of swarms of different insects, each lasting but a few hours or a few days. If you refer to back issues of the daily papers, you will see that hardly a summer season passes without some swarm of insects being reported from one part or another of greater New York. Last year, Brooklyn had two—first it was green flies, that appeared from nowhere; and then it was huge cockroaches with faces like Tojo, that appeared out of drains.

Such phenomenal appearances of animals should properly be described as emigrations. They arise from different causes, follow a different course and end in a manner that is absolutely contrary to that of migration. The difference is between life and death, for migration is designed to make possible the continuation of the species, while emigration invariably ends in total extinction of the hordes. Emigration is, in fact, mass suicide. Yet there are things in common between these two contrary marvels—features that must be understood before any attempt to explain migration can be made.

Scientists had long noted a certain periodicity in the occurrence of the Norwegian "lemming years," as they are called, and while they were investigating this fact, several most unexpected and, at first, inexplicable things came to light. The lemmings live in distinct colonies on barren mountain uplands above the tree line, where the vegetation is composed of stunted herbage, grasses and lichens. The woods below are inhabited by another kind of lemming, and the species keep strictly to their own territory.

Every so many years a great increase is noted in the number of lemmings in one of the colonies, and concurrent with this increase the little animals, which are usually the timidest of creatures, become rather bold and fearless. They begin to produce larger litters of young at shorter intervals and throughout a longer period of the year. As a result, the whole population increases progressively, but, strangely enough, surrounding colonies do not do so; nor do the woodland lemmings close oy. Then another most unexpected thing occurs.

The animals that prey on the lemmings also begin to increase in numbers—owls, martens, weasels and hawks—and they, too, become bolder and more voracious. The whole process goes on until there is hardly standing room for the animals, when the multitudes begin to spill over into the woodlands—a land quite unsuited to the species. The expanding colony never invades the territory of surrounding lemmings of their own kind; they only move into that of the wood lemmings, and once the dam has burst, the hosts pour forth and down the mountainside, followed by swarms of enemies that prey on them ceaselessly. Then on they go, not in columns, but as a vast moving blanket that creeps across the earth.

The lemmings may take two or three years to reach the western coast of Norway, according to the territory in which the swarm originates, while all the time they are devoured by the thousands, die in millions from a fever contracted by drinking water that they have fouled, are drowned in billions crossing rivers and flords or simply wilt away from starvation. Those that reach the sea press on, swimming unthinkingly out into the Atlantic to perish. It is a mass hysteria; there is no turning back. These timid, retiring animals have lost all their natural sagacity. And all the time they keep breeding—litter follows litter.

Now it was discovered that sometimes these migrating lemmings reach isolated plateaus that are suitable to them and that parts of the swarm settle down there to colonize the territory. There seemed to be nothing to prevent them from establishing themselves successfully for all time. But here came a big surprise, for it was found that always in a few years these colonies became totally extinct. Why, the investigators asked themselves, should these lemmings suddenly start to breed so madly and why should all those that emigrated either commit mass suicide or just die out, while those few left behind survived and in time gave rise to another swarm? And while looking for an answer to this question they found the first and perhaps the most important key to the whole mystery of animal movements.

An important part of the investigations into this fascinating problem called for anatomical examinations of the animals themselves at all phases of the swarming. It was discovered that the internal sexual organs, or gonads, underwent extraordinary changes. What is more, the whole animal changed anatomically in accordance with its temperament and its increased vigor. Puzzling over this further discovery, the investigators suggested, and later proved in a most dramatic manner, that something the lemmings had eaten had changed their whole metabolism. They surmised that this unknown substance must be indestructible and stored in the body of the lemmings, whence it could be transmitted to their offspring and even to the animals that fed upon them. For a time, this substance remained a scientific *X* which exactly fitted all the known facts of the case. Then vitamins were discovered.

Lemmings live in colonies.

At once it was recognized that these temporarily indestructible substances exactly fitted the requirements of *X*. A search began for a source of some such vitamin, and it was not long before one was found in the tender lichens and other greenery that lay dormant under the winter snows and which burst into a riot of growth with the arrival of the spring. This vitamin was found to be in a minute green alga which, together with a fungus, forms the lichen so prominent in the flora of those regions. The lemmings feed on this lichen after their long hibernation, and the vitamin is stored in their bodies. Furthermore, it was later discovered that a hormone secreted by the anterior pituitary gland does, in fact, stimulate the gonads, thus producing increased fertility. Here, then, was a concrete and understandable cause of this phenomenon, and one which later led also to an explanation of its effects.

The source of this exceptional, almost artificial stimulant to breeding activity was left behind when the animals emigrated. They carried the vitamin with them in their bodies. In the case of those that found a haven in some suitable environment, it became disseminated through overuse and, there being no supply at hand to replenish it, it became less and less potent. The animals lost their fertility and, being utterly exhausted, died out, for this stimulant is like a drug that squeezes the last ounce of vitality out of the animals. This is the most vital fact, and one that unlocks further doors leading to the secret not only of emigration but also of migration. This may be the primary cause of all mass emigrations and of their terrible conclusions, though the stimulant need not necessarily be the same. The mass hysteria and mental instability, as well as the craze to breed often noted among emigrating swarms of animals, are probably due to this stimulant, but it is a simple lack of food or water that actually prompts the animals to start the trek. Once moving, however, they cannot stop, nor do they do so until some tragedy overpowers them.

Migration is an altogether different matter. It is an orderly and regular behavior pattern, and yet the very causes that induce it may be the same as those which prompt this mass suicide and exhaustion, as we shall see. The difference between emigration and migration is simple to comprehend. Whereas emigration always leads to the disappearance of the animals, in migration there is always a return to the point of origin of the journey, either by the very individuals that set out or at least by their offspring.

(Continued on page 26)

RATIONS FOR BOBWHITE QUAIL*

W. J. Stadelman,† E. W. Callenbach, R. R. Murphy, and R. V. Boucher‡

A Report on Some Nutritional Experiments

PRACTICAL skill, sometimes designated art, is and probably will continue to be the factor of paramount importance in attempts of man to propagate living things. Frequently little or no scientific information is needed for small scale production. However, when propagation is attempted as a commercial venture so many problems are encountered that the substitution of facts for opinionated information becomes a practical necessity.

In recent years large scale propagation of bobwhite quail has been undertaken on private and public game farms. This has resulted in (1) an accentuation of old difficulties, and (2) the appearance and recognition of a host of new troubles associated with the unnatural conditions accompanying large concentrations of populations in restricted quarters. Specific environmental problems encountered include provision of proper and adequate nutrition, shelter, and sanitation, with adaptation of rearing procedures to the disposition and instincts of the species. This paper is concerned with nutrition.

Very little factual information on the dietary requirements of artificially reared bobwhite quail is available. LeCompte (1931), reporting early work in Maryland, itemized a feeding schedule which included: First feeding at 24 hours; clabbered milk throughout rearing period; closed formula commercial starting and growing mashes (whether chicken, turkey, pheasant, or quail not stated); green feed; sand and grit; and a commercial grain mixture (closed formula). A year later Handley (1932) reported that W. B. Coleman had successfully reared quail by mash feeding without either clabber or boiled egg. No mention was made of green feed or other dietary supplements. At the same time MacNamara (1932) reported success in rearing quail on a mash ration without clabber or boiled egg. He did not indicate whether supplementary feeding of green feed or other materials was practiced. MacNamara's starter mashes had calculated analyses of 17.30 and 19.15 per cent digestible crude protein. Growing mashes, used in conjunction with the starters, were calculated to contain 19.20 and 20.42 per cent digestible crude protein. It should be emphasized that these protein levels are not for crude protein but for *digestible* crude protein, the digestibility figures being based on investigations involving four-footed domestic animals and not game birds or more nearly related domesticated poultry. A year later MacNamara (1933) pointed out that some quail breeders were using mashes "having a protein content from 20 to almost 30 per cent."

Sometime later Petty (1934) reported excellent results from the use of several closed formula commercial chick, turkey, and quail mashes with and without supplements of lettuce or fermented alfalfa meal. Whether other supplementary feeds or special feeding procedures were involved in Petty's work is not clear.

In none of the publications referred to has any specific information relative to formulae been given. Likewise, with the exception of LeCompte's work, it is not known how many or what kinds of nutritional supplementation and modification or changes in the details of rearing management during the rearing season were involved. These facts are important for, as indicated later under Experimental Procedure, quail raisers are apparently accustomed to all sorts of additions and variations in diets and mechanics of management, any or all of which are more or less disregarded in verbal or written discussions but which may vitally influence results achieved and a correct interpretation of differences between groups.

The writers have found only three publications reporting definite experiments in bobwhite quail nutrition. Norris (1935) is credited with concluding that "27 per cent of protein was necessary for the most rapid growth of the chicks of this species. However, the difference between the results obtained at the 27 per cent level of protein and the 24 per cent level of protein was not great." Seven years later Nestler and associates (1942) published composite results of four experiments on protein requirements. Their report stated that a 28 per cent level of protein intake gave best general results during a rearing period of 10 weeks. An interesting point emphasized was that 45 per cent mortality during the rearing period is considered normal by bobwhite breeders. In later work, Nestler et al. (1944) were able with small groups of chicks, to reduce six-week mortality to 18 and 19 per cent on three diets and 10 weeks mortality to 22 and 20 per cent on two of the same diets.

Experimental Procedure

The two experiments described herein were conducted at the Pennsylvania Game Commission's Fisher State Game Farm, Schwenksville, Pa. Since the farm is located 180 miles from the Pennsylvania State College, experimental observations were limited to bi-weekly visits by the writers. A careful record of chick behavior, management procedures and any occurrences considered to be unusual or of experimental interest was made for each experimental group by the caretaker or game farm superintendent. Growth data, regular periodic observations of environmental conditions, and feed consumption data were obtained during the scheduled visits of the writers.

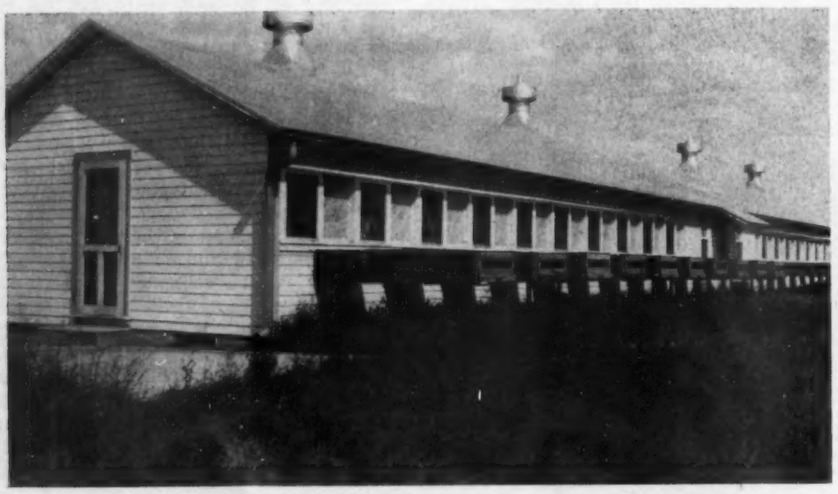

Figure 1. Quail brooder house with attached wire-floored outside runs.

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As intimated in the review of literature, bobwhite quail management usually includes many procedures not always discussed completely in reports of rearing results. Consequently, certain practices, taken for granted in the standard quail rearing procedure at the state game farm, but inimical to most accurate experimentation, were placed in effect without previous knowledge or formal approval of the writers. Since, with a few exceptions as noted, the unscheduled procedures were constant for all pens, the comparative data assembled are completely valid for accurate interpretation. However, from the standpoint of practical application of results, the best feeding and management findings must remain too complicated and too cumbersome for greatest satisfaction. It is hoped that further experiments may result in the solution of certain critical problems and greatly simplify rearing technique.

Both experiments were conducted in the long quail brooder house illustrated in Figure 1. Each wing, on either side of a central feed room, is 56 feet long, 20 feet deep and 8 feet high at the walls. Each inside brooder pen is 3′ x 7′ x 12″, the area occupied by the electric heating unit being 3′ x 3′ x 12″. Each outside run, as shown in the illustration, is 3′ x 8′ x 12″.

Inside pen floors are 3-mesh-per-inch hardware cloth supported over metal droppings pans, kept bedded down with shavings. The outside runs are floored with 2-mesh-per-inch hardware cloth supported over droppings pans not bedded but washed clean at frequent intervals. Replicate electric heating units and the same kinds, sizes, and numbers of feeders, water fountains, etc., were used for all groups of chicks. A representative complement of equipment for a group of chicks is shown in Figures 2 and 3.

Experiment One. Twenty-two groups of 100 12-hour-old bobwhite quail chicks each were placed in brooding quarters as described, on the afternoon of May 28, 1942. For purposes of convenience, duplicate groups located on opposite sides of the central brooder house alleyway were designated a and b. Mash formulae are given in Table 1. Identification of groups for number, mash mixture fed, and chemical composition, by analysis, of the mash mixtures is shown in Table 2. The standard feeding procedure was as follows:

Maxco, a 20 per cent protein commercial mixture of cooked wheat flour and 68 per cent protein meat scraps, was mixed in the ratio of 8:1 with cod liver oil having a guaranteed potency of 200 A.O.A.C. chick units of Vitamin D and 1500 U.S.P. units of Vitamin A per gram of oil. The Maxco and oil were mixed thoroughly, scalded with water, and dried to a crumbly mass by the addition of a sufficient quantity of the mash mixture fed to the particular group for which the Maxco was intended. Decreasing quantities of Maxco and increasing quantities of mash were added daily until at two weeks the Maxco was discontinued entirely, the dry mash alone being available thereafter. The Maxco mixture was fed 2 to 4 times daily, the number of feedings per day being decreased until stopped completely when the quail were two weeks old. The Maxco was used chiefly because its texture and appearance attracts young chicks and stimulates feed consumption. It also acts as a vehicle for the Vitamin D oil until mash consumption will take care of the Vitamin D requirement of the chicks.

The appropriate group mash mixture was available constantly in small flat pans. On and after the second day ground lettuce, and later leaves of lettuce, was fed. On and after June 5, when the quail were 8 days old, charcoal was sprinkled on the mash whenever feed pans were filled. The chicks were flushed with epsom salts on June 10, 16, and 29 because several groups showed symptoms of constipation. All groups were flushed to maintain uniformity of management procedure except that on June 10, through an oversight, groups 11a and 11b were not treated. The epsom salts solution used was made up of 1 tablespoonful of the salts to each 1 gallon of water.

Except as noted later in the discussion of results, feeding and other management procedures were constant for all pens. Thus, while the general management system was rather complex, the only major environmental variable was the difference in mash mixture provided.

Experiment Two. Twenty-two hundred day-old chicks divided into groups as in Experiment One were placed in the same brooding quarters on July 16, 1942. The mash mixtures fed, in part duplicates of several used in Experiment One, were based largely upon observations made during the earlier test and the results of previous work with Ring-necked pheasants. Table 4 gives the mash formulae used and Table 5 shows their chemical composition. As indicated in this table (groups 20 and 21), an attempt was made to eliminate the Maxco moist mash feeding during the early life of the chicks. Except as indicated otherwise, all groups were fed in a manner similar to those in the first experiment. Epsom salts was fed on July 31.

Results and Discussion

An indicated under Experimental Procedure, all treatments were run in duplicate. Since careful examination of tabulated results showed few important differences between the duplicate groups, the data as presented here are for combined groups considered as single units. Measurements used to evaluate the rations fed were: (1) growth, (2) feed usage (3) mortality and (4) quality of birds reared.

Experiment One. Results for this experiment are summarized in Table 3. On the basis of weights at 6 weeks, groups, 7, 6, 11, and 10 in the order named were distinctly superior. The same groups, rearranged with 11 and 10 ahead of 6 and 7, experienced, in order, the lowest mortality and therefore best livability. In feed usage, groups 6 and 7 required virtually the same and the largest amounts. Groups 10 and 11 used far less feed than might be expected in comparison with other groups. This is easily explained.

The mashes fed to groups 1 to 8 inclusive were similar in physical structure to usual poultry mashes. Groups 10 and 11 were fed the "kernel" mixtures in which the ingredients were processed to form minute granules. Since shallow open pans and hoppers were used for feeding the mash mixtures (Figure 2), the quail could scratch or dust in them. It was observed that feed wastage, which could not be measured with any degree of accuracy, was quite heavy in the ordinary mash-fed pens and much less in the "kernel"-fed pens. This is a repetition of previous similar experience with pheasants. Because of the feed wastage no indices of feed utilization efficiency were calculated, and the term feed usage is used instead of the more familiar feed consumption. It should be possible, although admittedly difficult because of the small size and great activity of quail, to devise feeders which will greatly reduce feed loss and thus make possible more accurate determination of the nutritive value of mash mixtures. In general, and with the exception of "Kernel"-mixture consumption as noted, the data in Table 3 indicate clearly a close relationship between growth, feed consumption and mortality. They also show conclusively that mash mixtures 6, 7, 10, and 11 fed to groups similarly numbered were the best mixtures used, with little to choose among them. It may be mentioned in passing that both open formula mash mixtures were sufficiently lower in cost than the "kernels" to more than compensate for the feed wastage, and therefore greater feed usage, described.

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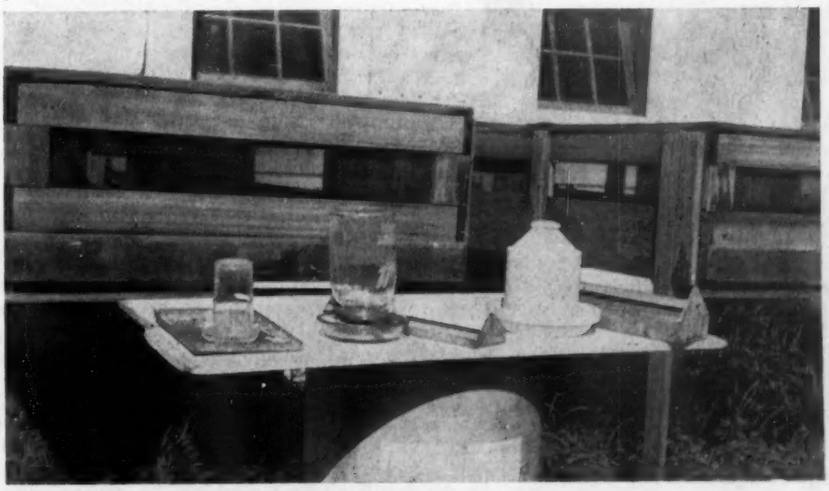

Figure 2. Feeding and watering equipment used for each group of 100 quail chicks.

Photo W. L. R. Drake

WHAT'S HAPPENING TO THE GROUSE?

By J. C. GILFORD*

In the Following Discussion the Author Expresses Only His Own Opinion, Based on Personal Observations

THE 1944 Small Game Season is now in the books, but I am certain that conditions relating to the small game supply will be the topic of discussion for some time, even though the season is now history.

Each individual or sportsman prefers to hunt certain game and that is as it should be. If we were all rabbit hunters or squirrel hunters, it would be most difficult for any plan or policy to provide adequately. I mention this because I do not want to appear narrow on one topic and thereby lose sight of other sportsmen's interests.

My personal like and first love is the Ruffed Grouse, and it follows naturally that my deductions and observations were centered on this bird.

I have heard from numerous sportsmen and from some of the best authorities that grouse were very scarce. Some prefer to use the term spotty. Regardless of the term selected, in my opinion the number of grouse in the forests at the beginning of the 1944 season was less than the number left in the forests at the close of the 1943 season. I admit, however, that in a given relatively small area there were times when a large number of grouse were found, but in every instance this condition was confined to an area entirely too small to be worthy of mention compared with conditions several years previous when the birds were abundant throughout their entire range in Pennsylvania.

By reminiscing a little, and I think we should for the sake of comparison and by comparison, perhaps we can find out what the score is before it is too late. For example, back in 1935 we had a peak year in ruffed grouse. From there on they took a decided plunge, then gradually but definitely started on the upward trend in 1937, the increase becoming more noticeable before reaching the peak in 1942.

The number of grouse left in the forest at the close of the 1942 season was most gratifying, but I sincerely believe there were less on the opening day of the 1943 season. Notwithstanding, there was a good hatching season and young birds were reared to maturity. Proof of this statement is that a good percentage of the grouse shot during the 1943 season were young birds.

That raises a very pointed question. What happened to the numerous old birds that were left at the close of the 1942 season that were conspicuous by their absence the opening of the 1943 season? There have been many logical reasons advanced, and I am not ready to say that they are without foundation.

However, despite this continual decline there was still adequate seed stock left at the close of the 1943 season. Bear in mind though that the number of gunners was considerably below the average for reasons known to all of us, which may, probably did, account for that factor. Regardless, with a reasonable hatching season there should have been sufficient grouse to warrant a good season for 1944. I am sorry to say this was not true as I analyzed the picture. There are many ardent grouse hunters who look forward each year to that choice sport who are convinced, and have so expressed themselves, that the Game Commission should close the season in 1945. There also are those who take the position that with a good breeding season the remaining stock will afford good shooting. I am of the opinion that this may be wishful thinking. I regard the responsibility of the Game Commission in the category of a trust—namely that it has no right to gamble with the principal. For an illustration suppose we have an open season on grouse this year coupled with a poor hatching this spring. Would we not be in much more serious trouble then than we were at the close of 1944? On the other hand, suppose we do have an exceptionally good hatching season. A closed season would not hurt a thing, and a good hatching season could not possibly bring the grouse population to within 50 percent of where it was at its peak. If we are to profit by past history, we would not be fair to our children and ourselves if we were to lend our support to such reasoning without first thinking the problem through. Consider the end!

Remember again that from 1939 to 1942 inclusive, when grouse were abundant over the entire grouse country of the state, the daily bag limit was not increased. Why? The reason, I believe, will be difficult to understand. Certainly the gunner did not materially reduce the grouse population during that period, nevertheless the birds are gone. Why should not the daily bag limit be increased when the grouse population is on the last half of the upward trend of the cycle? If this had been done, I do not think you would hear anything but favorable comment; but to talk of closing the season now, when the birds are scarce, will bring some criticism that may have been averted if the sportsmen had been privileged to enjoy their favorite sport to a greater degree when the supply was ample enough to permit an increase in the daily bag.

Conservation as I understand it is *THE WISE USE OF OUR NATURAL RESOURCES WITH FULL REGARD FOR THOSE THAT FOLLOW.* However, the progress in this respect is lacking terribly compared to other fields in our modern civilization.

In addition to the wonderful sport the ruffed grouse affords, it has been wisely selected as our state game bird. As such we must preserve it for posterity. This reason alone amply justifies reasonable expenditure and sufficient study to avert catastrophes such as befell the passenger pigeon and the heath hen.

If we have hit the bottom of what may be termed a cycle and are now on the up trend, which I think we are as I will try to substantiate a little farther on, would it not be nice to have Pennsylvania forests full of grouse for our boys? I believe that there will be more of them home to enjoy this real sport in '46 than will be in '45.

I do not wish my personal observation on the abundance and scarcity of grouse to be construed by anyone as being absolutely conclusive. In 1942 when the birds were at a peak, we would occasionally shoot some that had a number of lice or flies on them. In the season of '43 these lice or flies were more noticeable and numerous. In '44 very

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few of the birds I killed had any on them. It is my belief that our grouse are on the upward trend because the flies appear to be on the decrease. In other words I hold these parasites responsible to a large degree for the decrease in the grouse population.

These insects are slightly larger than an ordinary housefly. The body is somewhat smaller but the wings are larger than those of the housefly. They do considerable darting when they fly. The wings are a dirty color resembling the skin of a water snake. The body when full of blood is a bluish color. I do not know definitely, but I do not think the insects occur on the birds in sufficient numbers to weaken them by continual sucking of blood, but rather I believe they may transmit to the grouse disease of some kind in the same manner the mosquito transmits malaria to its victims. I think in this way a large number of our grouse have disappeared, and I would like to suggest something I feel will be preventative in its application, if I am right in my theory.

There are numerous areas on State Game Lands and private lands from which the timber crop has been harvested, and I think it would be a very good policy in the winter months to throw some of these tree tops together in large piles and set them afire, burning at least one pile every three or four hundred feet. The resultant wood ashes would be a wonderful place for the birds to dust. It would still leave ample cover in the forms of tops, and such fires would be inducive to briar growth which produces game food. It is true that the weather eventually would leach the wood ashes out, but would it not be the part of wisdom to add to them perhaps burnt lime or some commercial insecticide. I am sure that this can do no harm if the burning is done in the winter months, and I am just as certain that it will do a lot of good. At least it will give these birds a chance to rid themselves of flies and ticks.

We have heard a lot about the burning of forests, some persons believing it to be the only way to improve small game cover, others believing it a mistake. Still another group believe that controlled burning is the answer. However, I believe the method I suggest would perhaps come the closest to controlled burning. I am going to try it because I believe in it, but even if it is 100% correct, all the work that we can possible do ourselves will not be sufficient to make any material showing one way or another. This is a job for all of the shooting fraternity to pitch in and lend a hand. The need is great enough for all of us and it certainly can't do any harm. FIRE IS A GREAT SERVANT, BUT A HARD MASTER.

I would like to suggest that someone qualified, an expert on insecticides, explore the possibility and advisibility of adding to these ash piles commercial insecticides. The U. S. Department of Agriculture is doing a remarkable job in finding ways to control and exterminate the gypsy moth. The one element being used, apparently in the experimental stage, has proven most satisfactory and complete. Of course, this insecticide is almost impossible to get as it has gone to war along with other good things. But when it is again available why should not its possibilities be fully explored? Perhaps by that time the U. S. Department of Agriculture may have the full answer.

There is still another and that must be considered who are hollering loud and mighty that the fox is responsible for this decrease in small game. I do not wish to be understood as saying that the fox is a vegetarian and will not kill and eat small game, but I do wish to be understood as saying that in my opinion it is a rank mistake to blame the fox for all of the scarcity of small game. The fox is a predator and I know that in some sections that are ideal fox country they were there in abundance, with the scarcity of grouse the foxes in some sections have actually moved on, which would imply that Br'er Reynard is only interested in living where there is an abundance of small game from which to feed upon. This I think is generally true. A fox would much prefer to stay where there is game than where there isn't any.

I am also convinced that the fox spends more time hunting and destroying mice and other rodents in the fields and forests than the hunting of small game. That a piece of small game present itself, his scruples are not such that he will pass it up. I am speaking now of the red fox, and I hope the sportsmen do not make the mistake of blaming all these shortcomings on the fox line. As stated before, I am not a particular friend of the fox, as he is a predator and will kill small game, but I do not think he can be held accountable as the No. 1 enemy of our ruffed grouse. Yet we hear too often the cry, "Fox", and I think we are overlooking the real and genuine cause. Let's control the fox and when we once get him under control, let's keep him there. I mean by control that the red fox could be in sufficient numbers for those individuals who like to hunt or chase them to enjoy their favorite sport. There is room and glory for all if we will but let good sportsmanship prevail. I think it is best to let it be said here that I can see no good in the gray fox. I think that is one thing that is generally rather well understood by all, and for that reason I have made no mention of the gray fox previously.

As you know there has been much headway made at the game farms in producing ringnecks for stocking purposes. In addition to the birds raised at the game farms, there have been on numerous occasions large numbers of birds raised and purchased. These have done well in the true ringneck territory of the state. Without question they have afforded much sport to a large number of gunners that heretofore were perhaps largely grouse shooters, and its believed that the ringneck has absorbed a lot of the gun pressure that would have normally fallen on the grouse. Regardless of this fact, the grouse are on the decrease.

This whole question of small game supply is of such importance that it merits the full consideration of the best minds on conservation. I do not like to use the term cycle because I do not fully understand the extent of the term, but as long as I can think of no better one at the moment, we will have to be content with it. I am very much concerned when the peaks of these cycles come and go, for in my opinion each time we come back to a peak it does not have the same number of birds, but rather there are less each time, and when we hit a low the scarcity is more noticeable. This I think the only logical reason is the continued increase in gunning. Therefore assuming, and I think rightfully so, that the parasites having had no interference and by that reasoning retaining their constancy, I believe by controlling or exterminating them, we can make up the difference amply for the increased gunning pressure.

If we continue along the lines we have heretofore, letting the grouse work out their own problems so to speak, I believe in the not too distant future there will not be sufficient birds at the top of a cycle or peak to recognize it as such. Of course, this con-

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Photo by Delbert Batcheler.

Spot where grouse dusted.

DIGEST OF THE BUSINESS TRANSACTIONS OF THE GAME COMMISSION JANUARY 11, 1945

State Game Farms will be operated at maximum capacity.

FOR the first time in its history, the Game Commission by unanimous consent agreed to make public a digest of its business transactions, using GAME NEWS as the logical medium for this purpose. Accordingly, there follows the highlights of its meeting January 11, 1945.

It might be appropriate also to mention here another new departure which prefaced that meeting.

Recognizing that the expedition and ultimate success of its multiple problems depends largely on the cooperation of many other State Departments, from the Governor's Office down, the Commission invited the Chief Executive and other administrative heads concerned to be its guests at an informal dinner and get-together the evening before, for the purpose of meeting the Members of the Commission and its office and field administrative staffs and to hear briefly about their individual functions and responsibilities.

Ross L. Leffler, President of the Commission, made the necessary introductions all around, beginning with the honored guests which included: George I. Bloom, Secretary to the Governor; James H. Duff, Attorney General, Department of Justice; Dr. A. H. Stewart, Secretary of the Department of Health; James A. Kell, Secretary of the Department of Forests and Waters; Charles A. French, Commissioner of Fisheries; Colonel Richard K. Mellon, Director, Pennsylvania Selective Service; and Dr. Paul L. Cressman, Director, Bureau of Instruction, Department of Public Instruction, and ending with the Commission and its staff. At the conclusion of his remarks the entire group previewed a new motion picture in technicolor, depicting some of the major wildlife problems confronting the Department.

All in all the occasion was highly conducive to a better understanding, not only of the Commission's problems but of those which confront the Departments which have so much to do, either directly or indirectly, in helping facilitate the Commission's numerous and varied programs. Similar gatherings will undoubtedly be held in the future.

The next morning the Commission went into regular session, with all members present as follows: Messrs. Ross L. Leffler, Pittsburgh, President; R. Lamberton, Franklin, Vice-President; Col. Nicholas Biddle, Bethayres; G. I. Phillips, Alexandria; Harold Moltz, Williamsport; Dr. H. E. Kilgus, Brockway; John C. Herman, Dauphin; and Dr. Carl B. Rosenkrans, East Stroudsburg. The minutes of the previous meeting were approved, and under the next order of business Mr. Ross L. Leffler was re-elected president and Mr. Robert Lamberton vice-president for 1945. Seth Gordon was elected secretary of the Commission in addition to his duties as Executive Director.

Administrative and program suggestions represented for consideration some months ago were then discussed and standing committee chairmen submitted progress reports of their studies. One of these, having to do with a new and more extensive program for managing State Game Lands, was approved subject to such revision as further study may necessitate. In essence, the new program will involve more intensive improvement of wildlife habitats and the wise utilization of timber products.

Reaffirmation approval was given to a long contemplated proposal to redistrict the Commonwealth into 150 administrative districts, with all functional activities combined under one field officer in each district regardless of the character of the work to be performed.

The plan also provides for the organization of a specially equipped "flying squadron" whose duties will be to cope with law enforcement and other problems which district officers alone are unable to handle. The personnel of the squadron will be selected from the Commission's group of experienced enrolled field service officers.

A suggestion that competent persons be selected on a competitive basis to act as Assistant Field Division Supervisors was deferred subject to further study, but a proposal providing for the appointment of the proper quota of Deputy Game Protectors for each of the 150 districts was approved with the understanding that each individual shall be required to pass a more comprehensive examination prior to his appointment than in the past. A recommendation providing for a training program for deputies was also adopted.

A more aggressive program of public information was recommended by a newly appointed committee on public relations, consisting of President Ross L. Leffler, Chairman, and Commissioner G. I. Phillips, Vice Chairman. Briefly, the program proposes mat service to weekly newspapers, the preparation of several historical and educational bulletins, the acquisition of desirable supplementary motion pictures, the use of billboards for educational purposes in emergencies, the use of sound motion pictures when the necessary equipment becomes available, the purchase, when available, of a specially designed exhibit truck for use in the remote sections of the Commonwealth, and the promtion of conservation education in the public schools.

The Commission took definite and favorable action on one phase of the last mentioned program by approving the purchase of 2500 introductory sets of conservation education bulletins, entitled "YOUR LAND AND MY LAND," from the National Wildlife Federation (there are four bulletins to a set), to be made available to schools for supplementary reading at $.50 per set. It was further agreed to purchase additional sets as needed to meet the demand, at the best price obtainable. If the plan succeeds the over-all cost to the Commission will be low enough to enable it to handle the project at cost. This is a program in which sportsmen's organizations particularly can assist very materially by encouraging local School Boards to purchase the bulletins.

The Predator Control Committee which has been giving considerable study to this weighty problem recommended that a bounty be placed on the red fox as a control measure whenever and wherever necessary. Various sportsmen's groups submitted petitions also recommending such a bounty. However, the Commission will not take final action on the matter until the meeting when it sets the seasons and bag limits for 1945. In the meantime further studies will be made.

The committee reported that the Commission's field officers made a splendid showing trapping predators and instructing persons in trapping techniques, and that the services of Game Protector Arthur G. Logue as trapping instructor accomplished very beneficial results.

The question of allowing further compensation to field officers for predator work was discussed, and the Executive Director was in-

structed to contact the Department of Justice and the Executive Board to obtain the necessary approval for the payment of such compensation, either as a bounty per animal, a bonus for special extra service, or some other appropriate medium.

The desirability of setting up a plan to help field officers sell furs from predators to the best possible advantage was discussed. Attention was called to the fact that in at least one Division. the Supervisor handled such pelts for all of his subordinates, and that in this manner a better average price was obtained for the hides. The possibility of having all such skins pooled and shipped to Harrisburg where all fur buyers might bid on the entire lot was also discussed. The Staff was instructed to explore these suggestions and report at the next meeting.

It is also planned in the near future to develop a suitable reel of motion pictures on all phases of predator control work.

The committee on propagation held a meeting in Harrisburg on January 4, at which time it was recommended that the Commission should propagate all the game it can with safety and that as many game birds as possible be purchased, particularly from Pennsylvania dealers.

The special committee on the Phillips Memorial Arboretum submitted a progress report and Dr. H. E. Kilgus, chairman, said he expected to present, at a hearing of Army Engineers at Ridgway, on January 23, the Commission's views relative to the proposed construction of a large flood control reservoir. This reservoir apparently will flood part of State Game Lands No. 25, in Elk County, a portion of which it was planned to use for the Phillips Memorial. The committee will study the possibilities from all angles and hopes to develop the area agreed upon so that it will also serve as a study laboratory to aid the Commission in its land management program.

Following committee reports, the Commission took up the matter of new business as follows:

Two employess in the Military Service were reinstated as of January 1, 1945 and welcomed back to the organization:

Captain James N. Morton, who was returned to duty in his former position as Chief of the Division of Land Management as of January 1, and Private W. L. R. Drake who will assume his former duties in the Division of Public Information on March 1.

Game Protector Charles C. Brennecke of Altoona will be retired as of March 1, in accordance with the established policy to retire employees at 65 years of age. Mr. Brennecke rendered outstanding service during his twenty-one years with the Commission and as is customary his photograph and record of service will be published in a forthcoming issue.

In an endeavor to again make the hunting licenses available in advance of September 1, the Department of Revenue was asked to immediately place orders for the 1945 licenses and tags, specifying the use of the same fine tag material that was used in 1942. Resident tages will have a peach background with jet black numerals, whereas non-resident will be light green with black numerals.

The Commission was advised that on the basis of preliminary information 580,573 resident and 12,529 non-resident, or a total of 593,102, licenses were issued for the 1944 season, as compared with 570,418 resident and 11,827 non-resident, or a total of 582,245 for 1943. (Later information indicates the total number of licenses issued in 1944 was 604,136—590,180 resident and 13,956 non-resident.)

Preliminary information also indicates that the number of fatal hunting accidents was lower than the previous year. This information will be published as soon as it is completed.

In the January issue the Commission for the first time since it began tabulating Game-Kill Reports released the preliminary kill for 1943, based wholly on the estimates of its field officers.

The Commission discussed at some length the current production problems at the several State Game Farms, the desirability of pre-season releases of game birds, and the placement of contracts immediately with breeders for delivery both next Fall and the following Spring. It was agreed to operate the farms at maximum capacity permitted by food, labor and other conditions. It was also agreed, if possible, to purchase from 15,000 to 20,000 12-week-old pheasants for Fall release, principally in the northern half of the State, during the month of September. From 8,000 to 10,000 birds shall be supplied by the Commission's farms and from 7,000 to 10,000 by Pennsylvania breeders. In addition, from 15,000 to 20,000 adult pheasants shall be made available for release after the close of the 1945 season, also from the Game Farms and private breeders, these birds to be released mostly in the southern half of the State.

It was also agreed to purchase up to 10,000 adult bobwhite quail from private breeders for release next Spring, to supplement birds that can be produced on the Fisher State Game Farm.

The Commission also seriously considered certain requests for refunds and the restoration of hunting licenses and approved three of the former and four of the latter.

It is also approved the seizure of hunting licenses in the field from 34 flagrant violators of the Game Laws during the past season, and at a later date will consider revocation of the hunting and trapping privileges of such persons for longer periods of time.

In the past it has been the Commission's practice to take up for revocation consideration at its July meeting the cases which have accumulated during the year. The Commission agreed in the future to act upon all such cases as rapidly as the records can be compiled, so that those whose licenses are to be revoked will be informed at the earliest practical date. The effective date of such revocations will still be September 1, the opening of the new license year, as has been the practice in the past.

The Commission also restored the hunting and trapping privileges of five persons.

Realizing the important part that soil conservation plays in any land management program, especially in the Farm-Game sec-

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Bill Fagley, Clarion, left, and companion. Trapper Fagley says he caught 41 gray and 18 red foxes last winter.

"THE PEN IS MIGHTIER..."

An Outstanding Example of What Can Be Done by School Children to Encourage Safe Hunting

The week of October 23 last was set aside as "Hunt Safely" Week by Governor Edward Martin. At that time sportsmen's associations and other conservation-minded groups were urged to sponsor essays on the subject in local schools. Many of them did, and we take pleasure in publishing some of the prize-winning manuscripts.

The first organization to submit an account of its activities along this line was the up-and-going Crow Foot Rod and Gun Club of Wilkinsburg, and we are including the contributions of the first three winners. Before we do, however, we want to extend our heartiest congratulations to E. T. Kennedy, Publicity Chairman of the Club, for the splendid interest he took in the program, to Mr. R. A. Getter, Superintendent of the Wilkinsburg Schools, and Game Protector Ralph A. Liphart for their fine cooperation, and to all the contestants for their interest and enthusiasm.

We understood over thirty essays were entered in the contest for which a $25.00 War Bond was awarded as first prize and $10.00 and $5.00 in War Saving Stamps as second and third prizes respectively.

The winners of the prizes are Miss Winifred Sample, age 15; Dick Precious, second; and Bob Peabody, third.

By Winifred Sample

AS the leaves begin to put on their colored coats and the tang of the first frost fills the air, the trigger fingers of all avid hunters begin twitching in anticipation. To avoid accidents, every hunter ought to take all precautions for his own safety and that of others. Here are a few hints that may prove helpful:

If you can avoid it, don't wear clothing that's too drab or dull. White garments are even more dangerous. A white handkerchief may look like the flash of a deer's tail to another hunter. The relatively brilliant colors common to most outdoor clothing serve for identification and for safety.

Slippery soled boots are treacherous in the woods. If the soles of your favorite hunting boots are wearing smooth, have them fixed, or drive hobnails into the soles yourself.

Loaded guns should never be carried in an automobile. A bump in the road or an excited dog might cause a loaded gun to be discharged, with results that are serious.

The guns should be loaded only after you have arrived at your destination; and then the guns should be put on "safety" before leaving for the woods, because in the first heavy underbrush a small twig may hook through the trigger and cause disaster. The man ahead should always hold back the branches for the one following. Many a hunter's eye has been seriously injured by a snapping branch.

In order to secure the widest shooting range and avoid much of the danger, it is better for two men hunting together to walk side by side. If it is necessary for them to proceed in single file, the leader should carry his gun in the hollow of his arm with the muzzle pointing forward and down, and the man behind should carry his gun over his shoulder pointing backward.

When an obstacle is reached, such as a fallen tree or fence, put your rifle on "safety" before climbing over it. A barbwire fence is very dangerous, and the best plan is for one man to go through or over it without his gun. Then the guns can be safely handed over by his companion.

A rifle is more dangerous in the woods than is a shotgun. A stray bird shot may cause a painful wound, and at close range a charge of buck shot may be deadly. A bullet from a rifle however, may pass through its target, or ricochet from a rock and continue its flight with sufficient momentum to kill or injure a person in its path a long distance beyond.

Hunting running game, such as rabbits, is more dangerous than shooting birds on the wing or climbing animals, because of the necessity of shooting low and the possibility that another person may be within range. For this reason, members of a party hunting ground game should either stay together, or separate beyond range of one another.

Marshy ground is dangerous because it is slippery and it is soft. If you slip and fall, the muzzle of your gun can easily become clogged with mud which may cause the barrel of the gun to burst the next time a shot is fired. When snow becomes frozen in the barrel, it is just as dangerous as mud. Remove the shells before cleaning any mud or snow from the tip of the barrel.

Watch your step on uneven and rocky ground, and the stubble in corn fields. Tripping and falling is always dangerous when you're carrying a gun.

Firing against rocks and over water should be avoided, because the course of a ricocheting bullet is uncertain, and some person may be within range.

Upon returning to the car to change location or return home, the guns should be carefully unloaded before being placed in the car.

Following are ten commandments of nimrodic law:

1. Handle every gun as it is were loaded.
2. Be sure of your target before you pull the trigger.
3. Never leave your gun unattended unless you first unload it.

Above is Miss Winifred Sample, winner of the first prize in a "Hunt Safely" contest sponsored in the Wilkinsburg High School by the Crow Foot Rod and Gun Club of that city, with E. T. Kennedy, Chairman of the Club's Publicity Committee.
In the insert at top is Dick Precious, second prize winner, and Bob Peabody, who took third honors.

4. Carry your gun so that you can control the direction of the muzzle even if you slip.
5. Always make certain that the barrel and action are clear of obstruction—but be sure to look into the breech of the gun, not the muzzle.
6. Never point your gun at anything you do not want to shoot.
7. Avoid horseplay while holding a gun.
8. Never shoot at a flat hard surface; such as rocks or the surface of water.
9. Instruct your children in the proper use of firearms and explain the dangers of the weapon.
10. Do not mix gunpowder and alcohol.

By following the safety hints for hunters, as expressed in this essay, you should have a safe, joyous, and enthusiastic time hunting in the frosty November woods.

By Dick Precious

The need for an increased number of hunters who are reliable and careful while hunting is very great at the present time and will become greater unless something is done quite soon. Many men are careless hunters because they have not been impressed with the actual seriousness of this ancient pastime. In truth, the amount of thought given to this factor of seriousness is proportional to the number of accidents in hunting every year. If more thinking about application of safety rules were done by more hunters, many fatalities and mishaps would be prevented.

The first thing that should be done to remedy this drastic situation is a compulsory test prior to issuing the license. This test should consist of mental alertness, physical condition and previous training questions. If this were enforced the number of tragic deaths would be considerably decreased.

Of course every gun must be handled extremely carefully when it is loaded since it is such a dangerous weapon. Many accidents are due to carelessness in handling as well as carelessness in shooting.

In the case of handling arms there are several ways that accidents frequently occur and should be guarded against. A hunter never should crawl or climb over or under a fence with a gun in his hand. A rifle is too easily discharged to permit any such thoughtless action. Furthermore if it ever becomes necessary to climb a tree, the gun should always be left on the ground in the care of another hunter unless it isn't loaded. In the case of climbing a fence the gun should be placed on the ground to be picked up after crossing the fence. Another rule for safe hunting is that a hunter should never shoot at a stone, steel or other hard flat surface such as water, because the bullet may glance off and prove to be a dangerous missile to the shooter or any innocent bystander. Another very important rule to be followed is that the hunter should always have complete control over his gun in the case of any mishap such as a slip or fall. Guns should always be in first class condition to prevent accidents which occur in their actual firing mechanism. Only arms in good condition and those that are reliable should be used since a great number of accidents are due to the use of old rifles and pistols that do not operate efficiently. Moreover bright red clothing should be worn at all times during hunting.

In addition to the above rules pertaining to the handling of a gun there are those in regard to firing a rifle in the right direction at the right time. Care must always be taken that the target is game and not another hunter.

In conclusion, I think that the very most important rule is to think and consider the seriousness of the whole matter of hunting.

By Bob Peabody

There are only two kinds of hunters—the dead and the alive. Last year 1,027 hunters shot their last shot, saw their last rabbit or deer and all because of carelessness on the part of themselves or on the part of others.

"Appalling" you say? Yes, it is, when one stops to think and you realize that not one of these should have died. When you consider that these hundreds of fine Americans were killed doing the thing they probably liked to do, most of all.

"What can be done about it" you say? The answer can be summed up in three words. "Use your head." If all hunters would follow this maximum no one would be hurt.

Two of the most popular ways of being killed are by looking down the barrel of a gun and having the gun go off in an automobile.

To rid ourselves of these evils every gun should be treated with respect. It should be assumed loaded until examined by yourself.

But these are only general safety rules that every one should know and follow. The only way this breath-taking amount of fatal accidents can be reduced is by preventive measures.

I would recommend that a medical examination, including a very strict eye test be given or made compulsory in order to get a hunting license. This would eliminate those that had illness and also those that had bad eye sight. In this way many accidents would be eliminated from the start.

In conclusion, I repeat, everyone of the hunting fatalities of past seasons could have been eliminated if people would not play with their guns, if they would use their common sense, and if an eye test and a physical checkup were made compulsory.

The next association we heard from in connection with the Safety Program was the Oakmont Rod and Gun Club. It, too, did a bang-up job under the leadership of its president, C. J. Hetrick and through the splendid cooperation of Dr. W. Lee Gillmore, Superintendent of Schools. The contest consisted of writing essays on safe hunting and the association offered $10.00 as an incentive bonus. We are not certain how many contributions were made but Mr. Hetrick advises there were seven winners. We do not have space to include all of their articles, but shall publish the first three.

First honor went to Gus Glinos; second Dorothy Luciani; third, David Eckhardt; fourth, John Pyron; fifth, Louise Loeffler; sixth, Clark Unger; and seventh, Sue King.

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With Those in The Service

"The exploration of these far off islands (Philippines) are not replete by any means. I well remember my first view of a tropical island. Our boat was sailing through the China Straits early in the morning, its bow following a tortuous and sinuous channel. Many promontories jutted out from the shoreline and when submerged tapered into beautiful coral beds. Here the aborigines, in their scanty apparel, dive for the remains of countless weird and intriguing shell-like crustaceans. Beautiful blue starfish, and conchs clutter the sandy beaches that are washed ashore by the fall and rise of the tide.

"My first sample of this jungle peace fired me with terrific enthusiasm to explore many of the countless islands. Fortunately this opportunity presented itself and a friend and myself took quick and excited advantage of the invitation.

"Our conveyance was a round and small landing barge. We imagined ourselves as Robinson Crusoe. New Guinea is composed chiefly of a great chain of undulating mountains, many of which transpire into lofty heights. As our boat bobs through the straits these hills loom out in the far distance, not too far from the shoreline. Endless cascades can be dimly perceived on close observation with binoculars. These cascades fall through many glens continually bathing the lush plant growth.

"In these particular spots one can find seclusion and refreshment from the sun's stifling rays. Here, too, innumerable unknown creatures flourish. Vivid butterflies, wasps, ants, bees, flies, mosquitoes, leeches, spiders, beetles, crabs, katydids, snakes, lizards, bats (some commonly called flying foxes, or fruit bats), and a gorgeous array of varying colored birds. The latter are too numerous to describe at a fleet glimpse. Flycatchers, wren-like birds, without the bubbling song, hummingbirds galore, honey creepers, pigeons of all sizes and color patterns, parrots, herons, crows and ravens, also birds closely akin to the latter two which are quite talkative, dainty minute kingfishers along with their much larger prototypes, and different species of raucous jays. One particular jay is most elusive. He approximates the size of our crow, but his color pattern is of a brilliant black and pure white. This fellow led me a merry chase before I trailed down his derisive jibings and affirmed the owner.

"The birds just mentioned are of a different sort when compared to those of the new world, for their abode is of deep solitude and overwhelming jungle, massive, gloomy, incredibly far and paradoxically near. Nature has been lavish in her law of natural selection over here, but slighted these feathered friends when it came to handing out songsters. I miss the soft, plaintive voice of the field sparrow, and prairie warbler, so common at Pine Grove Furnace amongst the second-growth oaks and open glades, the power and melody of catbird and brown-thrasher, the rounded notes of the robin, and woodsy flute of the thrush. Surprisingly I have yet to witness a tropical bird singing.

"A description of these inhabitants including their philosophy and way of life would entail another epistle. Their seclusion, and how it affects all other tribes of different islands, their previous history delving into evolution of religion and their own physical make-up in regards to ecology, the marriage rituals, the weird and fiendish dances, the essence and supreme esteem placed upon the pig, the chief and his harem, and many other phenomena are most interesting to study and behold.

"After an hour or so of exploring we finally found a native village. With much effort we attempted conversation with little results. Surprisingly the natives first are reluctant in associating, but after one shows them no harm are quite amiable and possessed of the same inquisitiveness as we are.

"My friend did some bartering for green cat eyes, while I frantically and excitedly snapped the shutter of my camera.

"Our day progressed too rapidly and finally friend Wark and I realized our time had practically vanished. With much haste we scurried and retracted our trail to the landing barge. Several natives had congregated to bid us farewell. Our boat vehemently pulled away from the reef, the skipper pointed her bow homeward. We gazed wistfully at the fast disappearing island." —Lt. Wm. L. Rhein, D. C., O-316359, 21st Inf. Reg., APO 24, c/o Postmaster, San Francisco, California.

"Had a short furlough the first of December—just about enough to get home, squeeze in two days of deer hunting and get back. Had a wonderful time but failed to see a buck. Hunted between Dents Run and Hicks Run with an uncle of mine from Benezette.

"The deer population in that section seems to be very plentiful. In two days I saw over 100 deer, looked them all over very carefully, but did not see a sign of a horn. That is too many deer to see and no bucks. A doe season next year would be a good thing from what I observed. All the animals seemed to be in good condition but the severe winter they are having will determine that better than any observations.

"The big thrill of the trip was seeing a big 10-point bull elk. I first noticed it some distance from me. Just saw something disappear into the brush. At first all I could see was its legs which looked like two hunters walking, one behind the other. Got to thinking about it and decided it couldn't have been hunters. Kept watching the place and soon this big elk stepped out. It kept feeding around and coming closer to me all the time. At one time three deer passed not over five feet from the elk. They paid absolutely no attention to one another.

"This is the first time I have ever observed them that close to each other. The big fellow finally came over and laid down within 50 yards of me. I would whistle at him and he would roll that big head and horns around looking for the noise that was disturbing him. After teasing him for about 15 minutes I started to walk over to him. He jumped up and threw those big horns back and his shoulders and tore down through the woods. You could hear him crashing through the brush for some time. He sure was a dandy and he looked in perfect condition. Would say that he weighed around 800 to 1,000 lbs. Believe me, with steaks being impossible to get up home, my mouth sure did water for awhile. Have eaten elk steak and know what I was missing, but got just as much of a thrill seeing him as I would have killing him.

"Was informed by a friend of mine from Benezette, Deputy George Berry, that there is getting to be a large herd of them in the vicinity now."—S/Sgt. William R. Overturf, Company "D," Academic Regiment, Ft. Benning, Ga.

"Tell Leo that other than processing about 3,000 feet of film a day on the K-I-A machine, I run a photostat machine, load 16 mm. movie magazine's, shoot movies and stills develop, print and enlarge, make portraits, mix chemicals by the gallons, take care of the supply room and sweep, mop and fire a boiler. When time permits I sleep and eat if I'm not checking in or out a vehicle or shoveling snow. Brother talk about variety I've got it but all in all it still is interesting. I learn more every day."—D. L. Batchelor, Ephrata, Washington.

In Memorium

PENNSYLVANIA conservationists lost a good friend when Dr. Frederick A. Godcharles, of Milton, passed away on December 29, 1944 in Maryland. While a member of the Pennsylvania State House of Representatives (1901) and the Pennsylvania State Senate (1904) he was instrumental in introducing and passing several very important bills promoting the conservation of wildlife.

Dr. Godcharles was educated in the public schools of Milton and was graduated from Lafayette College in 1893 with the Degree of Electrical Engineer. For two years thereafter he served as Assistant Superintendent of Electrical Construction at City Hall, Philadelphia, but resigned in 1895 to become President of the F. A. Godcharles Company, owners of the Milton Nail Works and manufacturers of cut nails and spikes, hinges, washers and puddle bars. He filled this office until 1914. Meanwhile in 1910 he purchased the *Miltonian* and later established the *Milton Morning Bulletin*, of which he was editor and publisher until 1926. For many years he was also a Director of the Milton Trust and Safe Deposit Company. He began his career in public life in 1900 when, as a Republican he represented his district in the General Assembly. In 1904 he was elected to the State Senate and from 1915 to 1923 served as Deputy Secretary of the Commonwealth. From 1927 to 1931 he was Director of the Pennsylvania State Library and Museum.

Dr. Godcharles was an active member of the National Geographic Society, the Izaac Walton League, and the Pennsylvania State Sportsmen's Association of which he was an officer for a period of years. He was the organizer and for twenty-six years secretary of the Susquehanna Trap Shooters' League. He was also active in many historical, civic, patriotic and fraternal organizations.

In 1928 Susquehanna University conferred upon him the Honorary degree of Doctor of Letters.

Among his many other activities, Dr. Godcharles was the able author of much literature on Pennsylvania history, and was well-known as a public speaker throughout the State.

No finer tribute could be made to Dr. Godcharles than the following letter, dated January 11, 1945, from Hon. John M. Phillips of Pittsburgh, that grand old man of conservation who fought so hard to establish a Game Commission and for the basic laws upon which its foundation was laid. It was to him we turned for a record of Dr. Godcharles contribution to the sportsman's cause and in Mr. Phillips' letter that record speaks for itself.

Photo courtesy The Milton Standard.

DR. FREDERIC A. GODCHARLES

"I have been out of my office for some time which accounts for my not having answered your letter of the 8th sooner. I was terribly shocked and grieved to hear of the death of my good friend and companion-in-arms, Dr. Frederic A. Godcharles. His death was a great loss, not only to his intimate friends but to conservationists and sportsmen throughout the country.

"I had known him so long that I cannot give you the exact date when I first met him but I think it was in 1890 when we organized the Pennsylvania State Sportsmen's Association at Corry, Pa. He was one of the first corresponding secretaries of the Association. He was one of us who was influential in the formation of our Game Commission in 1895 and fought vigorously for years to secure the resident hunter's license law.

"In 1905, when the Commission was receiving only $10,000 a year for its conservation work and our two western Pennsylvania commissioners had resigned in disgust, I was forced onto the Commission by the Sportsmens' Association to fight for the license law they wanted. The first man I contacted in Harrisburg for help was the Doctor, then a state senator, and I spent much of my time with him.

"He was one of the finest men I ever met —an historian, a law-maker, a hunter-naturalist, one of the best shots in the state and his work along conservation lines was far-sighted and selfless. He was one of the few people who consistently and whole heartedly supported me in my fight for our fundamental conservation laws, even when we were opposed by the Hunters and Anglers Protective Association, claiming 75,000 members and supported for this reason by the politicians, and even when the president and secretary of the Game Commission opposed us. In fact, I can remember the time when I was the worst hated man in the state. About the only friend I had in Harrisburg was the doctor, who never seemed to be discouraged when we suffered a legislative defeat. His chuckles at my rage many times kept me fighting on.

"You ask about the Refuge Law of 1905 and the Buck Law of 1907. Yes, Dr. Godcharles backed both these proposals of mine as he did every worthwhile idea I ever had, including the Alien Gun Law. In 1900, I hunted in Jackson Hole, near Yellowstone Park and found that when game was disturbed, it took refuge in the park and I realized that if it were not for the park there would be no bear, elk, moose or other big game in Wyoming. So on my return I took the matter up with my late friend, William M. Kennedy, then president of the Commission, and advocated small Yellowstone Parks for Pennsylvania. In 1901 I hunted in British Columbia where mountain sheep ewes, lambs and two year old rams were protected and sheep, especially large rams, were plentiful, whereas in the United States, through the promiscuous killing of sheep, they were almost exterminated. So I advocated the buck law to bring our deer back to Pennsylvania.

"After thirty-four states were operating under a resident hunters law, we secured ours in 1913 through the good offices of Governor John K. Tener after an 18 year fight.

"The Doctor was very active in the passage of our fundamental game laws and although we circulated petitions throughout the state I can't remember his unrolling a petition in the senate chamber. However, in his enthusiasm, he probably did so.

"As a matter of fact, you can't give this great man too much praise or credit for the conservation work he did."—signed Jno. M. Phillips.

With the above, Mr. Phillips enclosed the last letters he received from Dr. Godcharles. One concerned the early history of the Pennsylvania Sportsmen's Association which is added proof of the interest of both men. Both letters were written in October 1944, one on the 8th, the other on the 25th.

Photo by Leo A. Luttringer, Jr.

Harold Plasterer, Supervising Bounty Clerk, holding one of a number of Great Horned Owls on which the Game Commission pays a bounty.

CLUB TO PAY BOUNTIES

The Lancaster County Sportsmen's Association recently adopted a plan to control predators in that county. J. Arthur Norris, Chairman of the movement, announced that $300 is being offered for red and gray foxes, great horned owls, goshawks and weasels from January 1 to March 31.

Each predator will have the following points, worth 25c each:

Red fox—10 points	$2.50
Gray fox—10 points	2.50
Great Horned Owl—8 points	2.00
Goshawks—8 points	2.00
Weasels—2 points	.50

Two $25 War Bonds will be included in the prize money to be awarded to the individuals scoring the highest number of points, and additional Bonds will be given in the event of ties.

Persons receiving State bounty on gray foxes, great horned owls, goshawks and weasels will be furnished a receipt which they in turn must file with the secretary of the association so that the proper points can be credited to them. Since the State does not pay a bounty on red foxes it will be necessary for claimants to submit the carcasses of these animals to the local Game Protector or one of his deputies who will issue a similar voucher for credit.

Chairman Norris said he hoped farmers who have experienced poultry losses and hunters who have found small game scarce this past season will throw their support behind the program. [In speaking of the extent of poultry losses especially he cited the case of Missouri based on a report by the U. S. Department of Agriculture for the year 1943 which lists the losses by foxes as follows: 2,824,629 chickens value at $2,319,215; 103,170 turkeys valued at $286,875; 14,520 lambs valued at $145,200; and 52,480 pigs valued at $1,086,336 or a total of $3,837,625—more for loss from foxes than our bounty system complete, cost Pennsylvania for 30 years.]

HOW SHOTGUN GAUGES ARE DESIGNATED

Comparatively few sportsmen, many of whom have been using shotguns for years, know how the system of naming shotgun gauges came into existence. Here is the story, says a Remington Arms Company authority.

"Back in the muzzle-loading days round balls of lead were used in the guns of that day. One sportsman would like a gun of a certain type—another of another type. After a number of years standard gauges were adopted by gun manufacturers.

"Those gauges were based on the number of spherical lead balls which would fit into the muzzle of a gun—and weigh one pound. For instance, the 12 gauge shotgun got its designation because 12 round pellets of lead which would fit in its bore, would, grouped together, weigh a pound.

"The same applies," he said, "to the way in which other gauges, such as the 16, the 20, the 28 and others, got their names.

"No matter how old the system is," he continued, "it will most likely continue in shotgun gauge designations. The diameter of the bore of the various 'cylinder-bored' shotguns are listed below:

10 gauge	.775 inch
12 gauge	.729 inch
16 gauge	.662 inch
20 gauge	.615 inch
28 gauge	.550 inch
.410 bore (approx. 67½ gauge)	.410 inch

A century ago millions of American wild buffalo ranged the west; the great slaughter beginning about 1860 dwindled the number to nearly 500 but through protection in national and other parks there are now over 5,000.

Lead Them and You Will Get Them

"In any form of shooting at moving targets," says a Remington Arms Company authority, "'lead' is all-important. *Lead them and you will get them.*

"No man can figure out," he said, "by mathematical calculation, just how far to lead a flying target, whether it be game birds or thrown targets. Each presents an individual problem.

"Each target in Skeet presents a problem in leading. Each target at the traps presents another problem, both dependent upon the wind and the weather.

"In game bird shooting, the picture is still the same—in relation to lead. A high-flying duck, a zooming grouse, an erratic timberdoodle, a cackling pheasant, the booming burst of Mr. Bobwhite Quail, and all the rest of them, present each individual with the problem of leading.

"Though articles long enough to fill many books have been written on the subject, no one YET has ever given or will ever give the proper prescription for SURE-FIRE effective leading.

"The art of leading comes only through experience in shooting. No 'shot' is ever the same, whether it be in the field, at the traps or at Skeet. A puff of wind, a twig in the way, a slip of the foot, a faulty swing, and many other factors play important parts in shooting that brings 'home the bacon'—or the trophy.

"No sportsman can tell any novice just exactly how far to lead any certain target. Yet he instinctively knows, through experience just when to touch the trigger. That knowledge comes only through experience.

"But *lead them and you will get them,*" he said. "Use your own judgment as to how *far* to lead—but *LEAD THEM,*" he added. "No one can ever hit anything by shooting behind it."—*Remington News Letter.*

Fine 170 lb. 10-pointer killed in Jefferson County by Loren E. Stewart, R. D. No. 1, Brookville, on December 8, 1942. Spread, 21¼ in.; length of both beams, 24 in.; circumference of beam near head 4½ in. Let's hear about some more big ones.

NATIONAL WILDLIFE WEEK SET FOR MARCH 18 TO 24

National Wildlife Week this year has been set for the week beginning March 18. Proclaimed by President Roosevelt in 1938, it has been sponsored annually by the National Wildlife Federation.

How the conservation of wildlife is related to soil, water and plant control will be the underlying theme of those conservationists who, through the press, over the radio and from the public platform, will tell this dramatic story to the nearly 20,000,000 Americans interested in the out-of-doors and the creatures that inhabit it.

Special emphasis this year will be given to postwar wildlife projects to insure adequate supplies of fish and game to meet the increased hunting and fishing pressure that is certain to follow the return of millions of service men and women to civilian life.

Each year the National Wildlife Federation issues a sheet of wildlife poster stamps reproduced from paintings by famous American nature artists. The current issue has 40 studies of birds, mammals, fish, flowers and trees in the 56 stamps on the sheet. One features a faithful reproduction of a Springer Spaniel.

Clubs, societies and individuals interested in securing further information about wildlife week activities should write the Federation at 1212 Sixteenth Street, N. W., Washington, D. C.

The Federation is a non-profit organization whose objectives are concerned with the preservation of wildlife.—See page 32 for sample of stamps.

The smallest owls in the world are the so-called elf owls of the American southwest desert areas; although only approximately five inches in length they are perfect little owls in appearance.

Summary of Fixed Charges Paid Since the Year 1921 on State Game Lands and Game Farms

Year	Road	School	County
1921	$ 765.66	$ 765.66	$ 382.83
1922	765.66	765.66	382.83
1923	895.60	895.60	447.79
1924	1,103.84	1,103.84	551.91
1925	1,719.59	1,719.59	859.79
1926	1,721.99	1,721.99	860.99
1927	1,850.98	1,850.98	926.68
1928	2,050.03	2,050.03	1,024.99
1929	2,769.59	2,769.59	1,384.74
1930	3,505.38	3,367.71	1,752.68
1930	63.24	63.24	53.64
1930	44.04	44.04	22.27
1930	44.54	44.04	.....
1931	5,196.98	5,245.97	2,598.52
1931	1.93	1.93	7.82
1931	13.70	13.70	.....
1932	6,433.18	6,434.83	3,216.61
1933	7,455.37	7,490.17	3,716.47
1934	8,600.35	8,615.72	4,307.17
1934	.....	.....	205.76
1935	9,172.62	9,359.15	4,679.58
1936	9,886.44	10,080.48	4,993.90
1936	130.13	721.44	327.42
1936	27.36	27.36	13.68
1937	10,914.64	11,036.72	5,419.11
1938	11,694.97	11,699.06	5,826.23
1939	11,966.09	11,971.72	5,983.68
1940	12,736.19	12,722.34	6,343.71
1941	13,154.17	13,168.48	6,559.28
1942	13,955.71	14,063.66	7,022.62
1943	14,637.04	14,655.62	7,318.68
1944	15,032.71	15,032.71	7,507.60
	$168,309.72	$169,503.53	$84,698.98

GRAND TOTAL—$422,512.22

Left to right: Wm. J. Davis, Field Division Supervisor, Div. "D," Huntingdon; Hon. John A. White, Conservation Commission, New York, and Game Protector Elmer Alexander, looking over a wild turkey propagating area.

OBITUARY

It is with deepest regret that we announce the death of John A. White, appointed New York Conservation Commissioner on September 2, 1943 by Governor Thomas E. Dewey. He was previously the president of the New York Conservation Council, an organization similar to our State Federation of Sportsmen's Clubs.

Commissioner White, who succeeded Lithgow Osborne, now Ambassador to the Norwegian government-in-exile in London, as head of the Conservation Department, established two new departmental bureaus on soil conservation and conservation education. An ardent sportsman, he was chiefly concerned with stream pollution and reforestation.

To us in Pennsylvania his passing means more than just the loss of a fellow conservationist. Only last summer he attended a joint conference of other state and federal conservation officials at the summer home of our Commission's President, Ross L. Leffler, and he spent several days with us this past Fall looking over hunting conditions in Pennsylvania.

A PRIZE WINNER

To Billy Musgrave, 16-year-old nimrod from Sterling, Wayne County, should go the credit for being the best all round big game hunter for the season. He and three companions came upon a large bear the first day of the season. Bruin was feeding on a 10-point buck he had dragged up a hillside about 500 feet. Billy dropped him with a slug from his single barrel shotgun, hitting him back of the front shoulder. They had to hire a team of horses to drag him out of the woods. The animal weighed 500 lbs. hog dressed. The best part of the story is that Billy couldn't buy any slugs last season so he and a buddy, Micke Stevens, melted some scatter shot into the ball that spelled curtains for his bearship. Later the young nimrod went to Pike County the first day of deer season and killed a 4-point buck with a well placed shot through the shoulder. He modestly claims it was all beginner's luck.

The American cultivated blueberry, now an important commercial crop, is a result of developments of the past 35 years in the selective breeding of this native fruit.

MOST VALUABLE FUR

The often-asked question as to which of all precious furs is the most highly-prized for women's coats is answered in favor of the chinchilla by a writer in the February number of *Frontiers*, the magazine of the Academy of Natural Sciences of Philadelphia.

Ermine, the fur of royalty, the sable, sea-otter, mink, all give way to chinchilla, fur so rare and so delicate that there are said to be less than fifty coats of wild chinchilla in the country.

The chinchilla, a little fur-bearer of the Andes peaks, is practically extinct as a wild mammal, owing to its fur value. But chinchilla ranchers in the United States are having fair success in raising it in captivity. One of these chinchilla ranches is in Washington, D. C., and another at Hatboro, a suburb of Philadelphia.

In addition to "Little Fur King," the chinchilla story by Hebe Bulley, a Chestnut Hill writer, *Frontiers* offers an article on the Latin, Greek and Anglo-Saxon origin of common bird words of today by Ernest A. Choate, Elkins Park, Pa., a school principal; a picture story on the Mule Deer by Josef and Joyce Muench of Santa Barbara, Calif.; one on the Diamondback terrapin, and a half dozen others in the range of natural history.

While *Frontiers* is the membership magazine of the Academy, it has a national circulation among naturalists, schools, and libraries.

1943-44 DUCK STAMP SALES

State	*Total*
Alabama	5,841.
Alaska	4,143.
Arizona	4,145.
Arkansas	19,725.
California	92,725.
Colorado	19,969.
Connecticut	6,172.
Delaware	2,906.
District of Columbia	1,349.
Florida	11,675.
Georgia	2,511.
Hawaii	103.
Idaho	19,921.
Illinois	66,587.
Indiana	22,740.
Iowa	36,749.
Kansas	25,278.
Kentucky	4,227.
Louisiana	35,199.
Maine	9,162.
Maryland	10,182.
Massachusetts	18,677.
Michigan	83,554.
Minnesota	95,446.
Mississippi	7,487.
Missouri	34,193.
Montana	22,147.
Nebraska	21,181.
Nevada	5,288.
New Hampshire	3,432.
New Jersey	19,519.
New Mexico	4,614.
New York	38,730.
North Carolina	8,291.
North Dakota	20,713.
Ohio	21,334.
Oklahoma	19,974.
Oregon	32,750.
Pennsylvania	25,027.
Rhode Island	2,764.
South Carolina	4,893.
South Dakota	25,483.
Tennessee	10,929.
Texas	70,441.
Utah	15,679.
Vermont	2,836.
Virginia	10,713.
Washington	63,050.
West Virginia	1,481.
Wisconsin	66,328.
Wyoming	6,447.
Puerto Rico	150.
Philatelic Agency	5,161.
	1,169,352.

"The deer season was a howling success in Butler County but old man winter interfered with lots of snow and left the roads in such shape that the big crowd of hunters did not get out much.

"We have lots of deer left even though the kill was heavier than in previous years."—Game Protector R. P. Schmid, Slippery Rock.

"The deer kill in this section seemed to be small this season. Most of the racks were from 3 to 6 points. One killed near Tidioute had 13 points. There were fewer hunters this year and the bad weather and deep snow probably accounted for the small kill.

"The members of the Corry Rod and Gun Club are feeding a large number of quail on one of their special wildlife refuges near Corry.

"Last week I shot a Cooper's hawk after it had killed a grouse. The grouse was budding in an apple tree when the hawk hit it, knocking it to the ground. Then the hawk returned to finish the kill giving me a good chance to shoot."—Game Protector George H. Burdick, Tidioute.

"The snowfall this month has been the heaviest in many years making most secondary roads impassable and even blocking main highways for several days at a time. The going was so difficult for deer hunters that few of them hunted the last week of the season.

"A local young lady commented to a friend that she had seen a whole truckload of *illegitimate* deer going through town.

"Two farm boys, near North East, while working in a grape vineyard, observed a red fox running towards them. They ran it down and killed it after a slight struggle. When they told a neighbor of their experience he said the fox was ailing or they never would have caught it and advised them to find out if it had rabies. This proved to be the case and both boys took Pasteur treatments."—Game Protector Elmer D. Simpson, Cambridge Springs.

"No meetings attended this month but I did go to Wesley to attend their meeting and date was changed on account of opening of deer season.

"The first week of the deer season was almost as successful as usual but the snow almost stopped things for the second week. I finally found about five that were taken around the edges of the last day. All roads were blocked and there were no parking places."—Game Protector Ralph H. Ewing, Polk.

"The deer season opened with a nice lot of hunters but they soon quit and the remainder of the season showed the smallest number I have seen for a long time. The kill was very light. A big snow storm occurred the last week and no hunters were out until the last day when I observed eight.

"One fellow got lost on a Monday but found his car Tuesday. However, the snow was 28 inches deep so he stayed in his car until Friday then walked down Lynn Run road to Blue Rock Quarry where he broke into a cabin, built a fire and found something to eat. We found him there on Saturday, and subsequently hauled his car out with a tractor from a saw mill. He had used up all his gas and was in bad shape from cold and hunger.

"The deer are coming down to the lowlands to feed. We can see them every night."—Game Protector William G. Matthews, Rector.

"We are beginning to reap the benefits of last summer's windstorm as the deer are using the browse provided by it."—Game Protector Jack L. DeLong, Portage.

"Out of 11 red and 5 gray foxes trapped between October 1 and November 30, 8 reds and 3 grays were females. I am wondering if this sex ratio is an indication that reproduction has reached the peak and from now on we will witness a steady decline in the number of foxes.

"From personal observations and from talking with a number of sportsmen I find there is a noticeable scarcity of woods mice and chipmunks. Such being the case the diet of foxes in this locality would necessarily be game birds and animals as well as other species."—Game Protector William Lane, Hustontown.

"The kill of deer in this section was about the same as last year although there were about twice as many hunters afield. The largest buck I recorded weighed about 200 lbs., had 10 points, and a 26-inch spread."—Game Protector Paul L. Failor, Mt. Pocono.

"A little item I wish to pass on to those interested—when planting corn put a small amount of turpentine over it and crow damage will be kept to a minimum. I tried this and the results were excellent. Be sure each grain is covered. About a half pint to the hopper-full is sufficient."—Game Protector Edward R. Richards, Portland Mills.

PLANS JUNIOR CLUB

The Matamoras Rod and Gun Club, which owns a very beautiful log cabin and several hundred acres of fine woodland in Westfall Township, Pike County, intends to utilize the Junior members, under adult supervisor, to improve hunting conditions while the majority of the members are serving their Country. The general idea is to take the Juniors in hand and teach them how to plant trees, food (the club has six acres cleared), use good judgment in cutting timber for browse, the use of timber, rustic construction, how to build bird houses, feeders, shelters, how to trap predators, etc. They will also receive instruction in masonry, carpentry, electricity, and other trades as the club is fortunate in having members from practically all walks of life.

"I believe that the Commission would be interested to know that the Union County Sportsmen grew approximately 450 bushels of corn and seven acres of buckwheat on their farm near Weikert, all of which has been left standing for game food. Another sportsman, Olan Boop, of Harleton, has contributed 150 bushels of soy bean screenings, which makes a very good turkey and ringneck food."—Game Protector M. B. Wells, Lewisburg.

"During my fox trapping operations in October and November, I examined the stomach contents of a number of gray foxes. Some of them were empty, but others contained a large amount of corn, also some rabbit fur and flesh. The last fox I caught was a red one, and upon examining the stomach contents, I was surprised to recover one Pennsylvania Game Commission fiber trap tag in good condition.

"Some deer had lost their antlers before the season was finished."—Game Protector Theodore T. Schafer, Conyngham.

"The extreme bad weather beginning December 11 practically stopped all deer hunting for the remainder of the season and undoubtedly had a material effect on the kill of deer in Division G.

"One pure albino, 8 points, 150 pound buck was killed in Jenner Township, Somerset County, by Roy Robertson, R. D. No. 3, Johnstown."—Field Division Supervisor Rollin Heffelfinger, Irwin.

Lost or stolen. If found notify George Filchock, Grindstone, Pa.

"A great many of the buck deer in this section had lost their antlers either before or during the season this year. I had reports of a great many antlers falling off, either when the deer was shot or when the hunter tried to drag the animal by them. I personally saw several very nice bucks that had dropped their antlers. There were also quite a number of bucks killed with only one antler. There were many bucks in the woods this year and nearly all the hunters I interviewed during the season had either killed a deer or had had chances and missed. The deer were in fine condition with plenty of fat on them. I personally saw and had the chance to look over thirteen nice bucks during the season."—Game Protector Maynard R. Miller, Honesdale.

"Chief Sheffer and another deer hunter were discussing their luck for the day when Chief asked the other nimrod how many deer he had seen. He replied, "One doe at 10 o'clock this morning, and she wasn't out of bed yet."—Game Protector W. T. Campbell, Franklin.

"Many bears were seen during deer season. It seems that most bears that were kicked out by the hunters on their drives just lay down under a large clump of laurel or huckleberry brush and were willing to call it their winter quarters.

"One resident hunter from down around Bethlehem came out of the woods, wild-eyed, and inquired the way to Shepherds Corners.

"'What's the matter?' I asked him.

"'I heard a noise,' he explained, 'and thought it was a buck. I stepped carefully around a clump of laurel and came face to face with a bear that must have weighed 500 pounds. I'm going home. I'll stick to rabbit hunting!'"—Game Protector John H. Lohmann, Milford.

"Deer season started with a good kill the first week, but heavy snow fell on the 11th and 12th to a depth of eighteen inches and closed all rural roads to hunting territory. The last week no hunters ventured out far in the woods. One exceptionally fine buck, a 12 point weighing 210 pounds, was killed in the district by James Quigley of Shippenville. Quite a number of large deer were killed but none as large as this were reported.

"On Monday, December 18, late in the afternoon a 12-point buck came into the orchard at my home and fed under the apple trees until dark. He was quite tame. This fine deer was in the vicinity all season and visited the orchard regularly before season. During the season he came to feed only during the night."—Game Protector Floyd A. Beck, Venus.

"On Christmas Day a number of children were sled-riding in the vicinity of Six Mile Run, Bedford County when they noticed a doe deer and a very small fawn feeding from its mother. The kiddies called their parents out to see this very unusual sight."—Game Protector Robert H. Port, Sarton.

"The severe snow and ice storms during December provided much needed browse for deer in the way of broken limbs. In fields where farmers were having damage all fall the animals came to the cornfields in numbers about twice as large as soon as cold weather arrived, indicating that natural food in the woods is very scarce.

"Four legal bucks fed on corn in one field every night during the open season. They could be observed with a spotlight only a few yards from the farmer's kitchen door, but in the daytime they would retreat to cover on the mountainside and all but one escaped being killed. The small size of the antlers on almost all of the animals killed indicates there are too many deer for the amount of food in this section of the state."—Game Protector Earl E. Smith, R. F. D., Williamsport.

"Quite a lot of deer hunters were in the woods the first three or for days of the season and a fair kill of legal bucks was made the first two days. The last week of the season was unfavorable, however, due to a sleet and snow storm which occurred Monday evening, December 11."—Game Protector H. D. Carroll, Thornhurst.

"The deer season is believed to have been one of the best we have had in this section for a number of years. More kills were reported than usual and the bucks ran quite large in size and were in good condition. The absence of the usual number of hunters was noticeable during the beginning and middle of the weeks."—Game Protector Howard F. Hoffman, Susquehanna.

"Most of the deer I checked this season had small antlers. However I think the kill was fair considering that deep snow cut the hunting short about a week. The number of hunters was very much less than last year.

"I no sooner get the roads opened up when along comes a hard wind or another snow and closes them up again."—Game Protector George E. Sprankle, Emporium.

Loren Stewart, R. D. 1, Brookville, and a semi-albino antlerless deer killed in Jefferson County in 1939. Approximate weight, 105 lbs.

Andy Ewart of Carmichaels with some of the foxes he trapped during the winter of 1943 in Greene County.

"While checking deer killed this season I could not help notice that about 90% of them had very small racks with very little spread to them. However this did not coincide with the findings of other officers I talked with."—Game Protector Peter A. Zikosky, Minooka.

"We had about as many hunters this year as last but there were not many in any one place at any one time, thus making them hard to contact because they did very little driving. More legal bucks were killed this year than last, however."—Game Protector R. F. Turley, Martinsburg.

Twin kangaroos, the first of which any record is available, were born recently at the Philadelphia Zoo; the mother is caring for one in her pouch, the other is being bottle-fed with cow's milk.

"Food conditions for small game are the best I have seen in the past three seasons. Grapes, dogwood and other shrubs have a good supply of fruit. Nuts are plentiful with the exception of the hickory. Beech crop is spotty with many of the nuts "deaf." Apples are very plentiful.

"We have been having trouble in Refuge 26A with dogs running deer. We're also receiving damage complaints from farmers in the vicinity of Refuge Headquarters. Most of the damage has been to buckwheat, and I have seen some fields pretty hard hit."—Game Protector Jack L. DeLong, Portage.

"We have an exceptionally large crop of acorns this year throughout Land Group E-1, also a good crop of hickory nuts. Beechnuts are plentiful in certain areas for the first time since 1935."—Game Protector Cecil D. Hancock, Port Allegany.

How Does the Game Commission Function

(Continued from page 3)

improvement. If a question of policy revision is involved, it is placed before the entire Commission for consideration and action at the earliest opportunity. If, on the other hand, it is of an administrative nature, the matter is placed in the proper channels for the attention of some staff employee.

While it may be possible for each member to keep informed with the various projects conducted in his respective district and to maintain a general knowledge of the progress of the various general activities from reports submitted to him, it is only when assembled at a regular business meeting of the Commission that full consideration can be given to all the statewide activities. It is at these meetings that full discussion is heard and formal action taken.

Previous to every Commission meeting, a schedule containing the numerous items of business to be brought up for discussion is prepared. The agenda is sent to the members sufficiently in advance of the meeting so that they can give the various problems careful study, thus enabling them to become fully conversant with each subject before it comes up for discussion.

All phases of the Commission's activities, both in the field and office, appear on the schedule. This comprises matters of importance pertaining to the State as a whole, as well as to the several regions. Reports are given by standing committees of the Commission, appointed to make a special study of various activities for the betterment of wildlife and its environment. Occasionally a committee is supplemented by men who are experts in the particular problem being investigated, and the results from their studies are included with the reports. Any item of business which may have been presented to individual members by the constituents from their respective districts are also received and given full consideration.

J. P. Mickley, Lewistown, with trophy bagged in Lycoming County last season.

It thus can be readily seen that the Commissioner's job is no sinecure, but one of many problems requiring much forebearance. In the solution of these issues, each member willingly makes many personal sacrifices in time, money and effort. It is true that they are reimbursed for expenses incidental to their various meetings—if they don't forget to bill them. But the biggest benefits the Commissioners derive from these duties are the pleasure and satisfaction of their contribution to the state and nation through the conservation of essential natural resources.

What's Happening to the Grouse

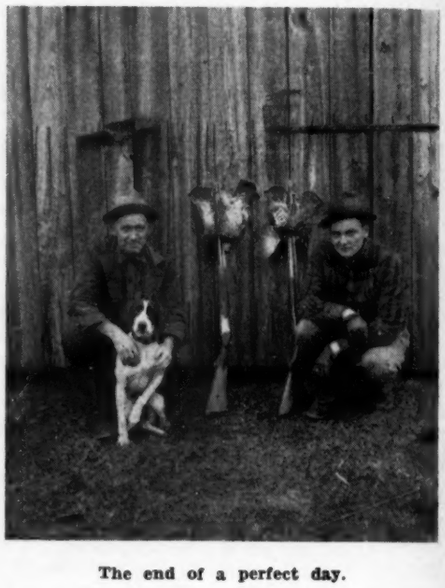
(Continued from page 13)

dition has been going on since the beginning of time, for I read recently in a newspaper of large circulation under the topic, "40 Years Ago Today", of the sportsmen complaining bitterly about the scarcity of grouse. I can remember quite a few of our peaks and low periods, and in each instance when the birds come back they appear to me to be in less numbers than the previous abundant years. For this reason I think it is high time that the best minds on conservation lend some of their time, official or otherwise, to solve this problem once and for all. It can be done, but not through the medium of wishful thinking.

I have my first time yet to hear any qualified grouse hunter blame the scarcity of food for the scarcity of grouse, except perhaps in the case of an over abundant deer herd which has in the past practically depleted the ground food in the forest. Much of the ground food consumed by the deer are essential grouse foods. Certainly under such conditions food scarcity may be responsible to a marked degree in the grouse population. Even at a time when and where the deer herd has not depleted the forests of the grouse food, the population would be on the up trend or peak of a cycle, thereby possibly creating the condition termed "spotty".

It is most difficult for me to understand why so much emphasis has been placed on large game hunting at the expense of small game. It would appear to be sound conservation to manage or control the deer herd consistent with the available natural food, for it has been proven that when attempts have been made to reduce the deer herd (doe deer) many have fought the action admitting that in some particular areas doe seasons have been indirectly responsible for over-shooting, thereby reducing the deer herd beyond the wish or desire of the sportsmen. This condition is difficult to regulate as long as the hunter insists on shooting when a doe presents itself as a target. However, I do not think this is of such importance particularly since it has been proven that such over-shot areas can be brought back in a couple of years provided the food conditions are favorable. I believe that appropriate measures can be taken that will increase the natural food for the deer herd. I think this should be done so as not to have an over-browsed forest, for when the forest gets to that stage, we have missed the best.

Where I am most concerned is that the over-browsed deer range does not make such a rapid recovery, and much of our over-browsed range will be practically worthless for years to come for either deer or small game.



The end of a perfect day.

YOU CAN BUILD A DEER HERD, BUT YOU CANNOT BRING BACK AN OVER-BROWSED FOREST IN THE SAME SENSE. IT WILL TAKE YEARS. For that reason alone the deer herd should be systematically controlled. In other words with the previous exceptions the food question is not apparently responsible for the scarcity of grouse this year. If that is a fact, which I believe it is, then I think we are on the right track.

There is no doubt that there are several contributing factors that will have to be taken into consideration and adequately dealt with before our efforts will be of material aid to the grouse population, as I do not believe flies or ticks are so damaging to the grouse that they constitute them their only enemy. We have had many years of gunning with little regard to the interference that our modern civilization has brought upon nature's balance, and it is logical reasoning that corrective measures, good as they may be, will not correct a condition overnight that has taken many years to create.

These are my personal views and I wish you to take them as such, and their worth accordingly.

Fossil remains of a giant flamingo, larger than any flamingo ever known before, has been found in a quarry in South Dakota; the tropics and semi-tropics are the usual home of this bird.

Wildlife Management with Emphasis on the Ringneck Pheasant

(Continued from page 5)

A congenial group of pheasant hunters comparing notes at the end of the day.

vesting many seeds that are used by the pheasant. Corn is the best food and it usually harbors one or more of the important supplementary wild foods like ragweed and foxtail.

In conclusion it should be pointed out that wildlife, and especially the game animals and fur-bearers, is subject to the same improvement methods now being used for domesticated animals and plants. This involves breeding and restocking. Eventually only the game animals, and fur-bearers that are ecologically adapted to the specific conditions of the area and which are economically best suited to meet the demands, will be utilized.

OUTLINE OF FACTORS INVOLVED IN A PLAN FOR MANAGING AGRICULTURAL LANDS FOR WILDLIFE

1. Food and Cover
   - A. Winter food
     1. Fencing to restrict grazing
     2. Restrict burning and cutting
     3. Controlled burning (in special cases)
     4. Controlled grazing
     5. Planting shrubs, trees, and *herbaceous plants*
        - a. Native local species (preferably)
        - b. Exotics (in exceptional cases)
     6. Planting farm crops commonly grown
     7. Introduction of special food crops (food patches)
     8. Crop rotation
     9. Farm practices
        - a. Harvesting and haying
        - b. Fall plowing
        - c. Fence row management
        - d. Cultivation
   - B. Winter Cover
     1. (1, 2, 5, 6, 8, 9a, b, c, d, under A included)
     2. Restricted hunting
     3. Distribution lanes
     4. Woodlot management
     5. Evergreen planting
   - C. Spring Food and Cover
     1. Special Nesting sites
        - a. Woods and brush
        - b. Fence rows
        - c. Weed patch and marsh borders
        - d. Special areas
     2. Individual territory (territorial spacing)
        - a. Woodlots
        - b. Brush cover
        - c. Marsh border
        - d. Fence rows
        - e. Evergreen plantings
        - f. Brush rock pile areas
   - D. Summer Cover
     1. Nesting sites
     2. Nest protection
     3. Flushing bars
     4. Flock distribution and protection
     5. Flock detention
     6. Water availability (not always important)
   - E. Fall Cover and Food
     1. Restricted grazing
     2. Harvesting methods
     3. Fence row, cutting and burning (refrain from)
     4. Field strips of cover to protect against movement off the area
     5. Evergreen planting
     6. Woodlot undergrowth (preserve it)
   - E. Fall Cover and Food (Cont'd)
     7. Restricted hunting, i.e., provide sanctuaries on each area
     8. Routing hunting system
     9. Food plots
     10. Cover-food combinations
     11. Special roosting sites.

Digest of Business Transactions, etc.

(Continued from page 15)

tions of the Commonwealth, the Commission authorized the employment of an experienced soil conservation expert, preferably one with Wildlife Management training, to render special service to cooperators on Farm-Game Projects and to work with County Farm Agents.

Twenty-five years ago the Commission started purchasing land for the use of sportsmen. Since January 1, 1945 a total of 778,736.78 acres of State Game Lands distributed through 63 of the 67 counties of the State have been acquired. The consideration paid for these lands amounted to the tidy sum of $2,954,551.40 or a general average of $3.79 per acre. In addition 38,229 acres comprising many tracts in various parts of the Commonwealth are under contract for purchase. At its recent meeting it agreed to purchase seven more tracts totalling 1,575 acres and conditionally agreed to purchase another tract of 160 acres.

The largest tract accepted was 740 acres in Lowhill Township, Lehigh County to be acquired from the Trustees of the Harry C. Trexler Estate. It is situated adjacent to State Game Lands No. 205 comprising 549.3 acres purchased from the Trexler Estate about a year ago. The other tracts accepted were in Bucks, Pike, Tioga, Clearfield and Potter Counties and were comparatively small additions to the Commission's present holdings in those localities.

The Commission also agreed to purchase 678 acres in Lycoming County which when acquired will become part of a new State Wild Turkey Farm, near Barbours, on the Loyalsock Creek.

The desirability of declaring a dove season for Pennsylvania, at least in the southeastern counties, was discussed and the Commission agreed to give the matter further consideration when it meets to fix seasons and bag limits for 1945, at which time it will recommend migratory bird seasons to the federal authorities.

Realizing the scarcity of conservation reading material for men in the military service, particularly in the overseas canteens, the Commission agreed to send complimentary copies of "GAME NEWS" monthly to all of these recreational centers it is possible to contact.

The high tailing bruin in the above photo was snapped by Mrs. J. R. Mattern, wife of a retired Game Commission Title Abstractor, just after it was released in Potter County. It had previously been trapped in another part of the county where it had been killing sheep.

The Mystery of Migration

(Continued from page 9)

In the circumpolar regions vast herds of reindeer move south every fall.

A great many different kinds of animals migrate, and every year more and more are added to the list of known migrants. The practice may be far more prevalent than we at present believe, and may, in the end, be found to be almost universal. The degree of movement that it entails, however, varies greatly. Elephants have been shown to perform slow migrations for breeding purposes that take nearly ten years to complete, during which time the cows never see the bulls. Troops of some kinds of South American monkeys migrate back and forth every few weeks between two areas of forest—a regular alternation that goes on throughout the years, but which never transgresses the boundaries of the two areas.

One of the most astonishing sights in the world is the migration of land crabs in Jamaica. These creatures dwell in crevices among rocks all over the island, but once a year they all descend at the same time to certain shelving beaches for breeding purposes. They do this simply by following the straightest line possible, so that they scramble many unnecessary miles over obstacles, even houses, that happen to be in their path. The females carry their eggs with them. Each contains a fully developed larva, which is a minute, shrimp-formed creature that can live only in water, and it is to release these in the sea by the bursting of the eggs that the crabs make their weary seasonal journey.

Perhaps the most extraordinary manner of migration is found among the lowly group of insects that includes the aphids, or green flies, so well known to fruitgrowers. There is a species that spends half the year on apple trees and the other half on the stems of grasses. These aphids happen to be used by certain ants as we use cows. They are herded and protected by the ants, and, in return, allow themselves to be squeezed periodically, so that a honeylike fluid which exudes from their bodies may be eaten by the ants. Now, the ants have discovered that the aphids have to migrate and, being solicitous of the welfare of their charges, they have the extraordinary intelligence actually to carry them down from the apple trees and to place them on the grass stems or to take them from the grass up to the apple trees, as the season of the year may demand.

The normal seasonal migrations of many animals may often be referred to as plagues, and some may indeed provide rather startling aspects. I remember once in my youth being accused of introducing several hundred newts into the family domain after dinner, when, in point of fact, I was safely in bed on the top floor of the house. The cause of the host of newts was simply the warm evening, which had prompted my family to leave some French windows open. Through these the amphibians had streamed on their way from hibernation to a near-by pond.

The Highway of the Frogs

The seal trade is dependent upon a seasonal migration, the animals coming from the regions of Nova Zemlya, from the east coast of Greenland and from the channels west of the Hudson Bay inlet to breed on the edge of the ice floes north of Iceland and in the mouth of the St. Lawrence River. The males arrive first, and seize a piece of territory, which they defend against all comers with great savagery. Later, the females arrive and immediately give birth to the little fluffy "white coats" that they have carried since the last meeting with the males a year before. Immediately after delivering their offspring, they are claimed by the males and again inseminated; then the males leave. The mothers linger till the young can fend for themselves; then they, too, leave. For the rest of the year, the fur seals are scattered far and wide over a vast expanse of ocean.

It now appears that most frogs make seasonal migrations to breed. Many tree frogs not only descend to the ground but travel considerable distances to special ponds or rivers. We once had a forest camp in a narrow valley in Africa that led down to a large river. This turned out to be a highway of the frogs. At the beginning of the rainy season we were suddenly invaded one night by a host of rare frogs with green bones that live on the tops of the forest trees. They were traveling on the ground, and in a few moments the tent was covered with green-boned frogs, and when we went outside with a light, the whole world seemed filled with the same species, all traveling down to the river. A few nights later came a host of tiny yellow-and-brown fellows; a few days after, big brown frogs with spurs on their thumbs came hopping by. More than a dozen species went by in the space of as many days, each keeping to itself, and all going to the river. What is more, most of them returned within a month, headed back into the forests to spend the rest of the year.

Globe-Trotting Terns

In the circumpolar regions, vast herds of reindeer move south every fall, and north every spring. They travel in small parties, feeding as they go, but sometimes when the weather changes suddenly, they become jammed together in tremendous droves which travelers have described as covering the flat, barren ground as far as the eye can see. Solid masses of animals sometimes pass without cease for four or five days. Eventually, these vast aggregations break up into small parties again and spread out, for these are true seasonal migrations.

Almost every kind of animal migrates. Lawrence of Arabia speaks of meeting a mass of migrating poisonous snakes while advancing toward Mesopotamia with his Arabs during the last war. The snakes were so numerous and his army suffered so many more casualties from them than from the enemy that he was forced to retreat and make a long detour.

But the champion traveler of them all is probably the Arctic tern, a small, slender, white, gull-like bird with tapering wings and a forked tail. This species nests about the eastern and northern coasts of Canada as far north as Baffin Island and the northwestern shores of Greenland. Small, numbered metal bands have been attached to the legs of nestlings in Labrador and the grown birds recaptured a few months later at the mouth of the Niger River in West Africa and in Natal on the Indian Ocean coast of South Africa. The latter place is a distance of nearly 9,000 miles from Labrador, and as these birds follow an erratic course and as it is unlikely that a sea bird would cross the Kalahari Desert of South Africa, it appears that this individual, retaken in Natal, must have covered well over 10,000 miles. Nor is that the complete picture, for the Arctic tern is found in the Antarctic during our winter. Moreover, it is never met with on the eastern seaboard of either North or South America, while it is well known as a seasonal migrant up and down the western seaboard of both Europe and Africa. From this it has been inferred that this species migrates from Arctic America across the North Atlantic to

Europe, thence down the coast past Africa to the Antarctic Ocean, and back up the same route the following spring—a distance, in all, of about 24,000 miles, or almost equivalent to the total circumference of the earth.

Why should birds perform these prodigious feats? Why should animals migrate at all, and what prompts them to do so? The only answer to this question that seems plausible is the suggestion that the breeding stimulant which was discovered to be the cause of the lemmings' increased fertility is found in the young vegetation—and in the insects that feed upon that vegetation—in the northlands freed from the blanket of winter snow by the warm spring sun. The birds crave this vitamin like a drug.

It is known that in comparatively recent geological times the earth passed through what has been called an Ice Age. The polar ice caps were tremendously enlarged, extending south in North America as far as the state of Kentucky. Animal life, especially in the winter, must have been forced south into the subtropical regions. However, the best feeding grounds, most abundant in the vital breeding stimulants, must then, as now, have been just south of this great sheet of ice in the belt where the summer sun melted the snow, and animals must have flocked to that belt to breed. As the ice caps slowly shrank, this northward flocking of the animals slowly extended until the spring movement became a migration. When the distance became great enough, many birds, on setting out for the warm south to recuperate from the exertions of breeding, found the intermediate areas already fully populated by their own kind, and had to fly over these relatives and seek winter quarters in more southern areas, where they did not infringe the rights of their own kind.

The habit among other groups of animals is often of similar causation, though it may be of totally different origin and have altogether unlike results. For instance, the Jamaican land crabs migrate for the purpose of releasing their larvae from the eggs and perhaps for mating immediately afterward. The astonishing behavior of Atlantic eels, though also carried out for the purpose of breeding, falls into a class by itself, the causes of which are unknown, but for the origin of which there is a fascinating theoretical explanation. This is based on what is known as Wegener's theory of continental drift.

Eeels spend many years of seemingly contented life in the ponds, ditches and rivers of Europe and North America, where they are dark green in color and fairly active. Then all of a sudden their color changes to metallic silver and their shape to a more streamlined pattern, while a radical transformation takes place in their internal anatomy. Then, leaving their safe homes, they go down the rivers to the sea and head out into the Atlantic. Those from Europe head west, those from America head southeast, and both swim onward without pause until they meet over a great deep in the Atlantic Ocean south of Bermuda, where they sink down and disappear forever.

Later, an eruption of tiny, transparent, threadlike creatures with bulging black eyes comes welling up to the surface and, spreading out like an ever-expanding mushroom, streams off in two groups, one to the east and one to the northwest. Those going east keep swimming for three years while they change their shape, until they reach the shores of Europe as the well-known elvers. Those going west also change, but they arrive sooner at the American coast. Both shoals immediately start up the rivers and penetrate farther and farther, until they reach the abodes whence their parents started out. What is more, those that go to Europe are invariably the European species of eel, and those that go to America are just as invariably the American species.

Acme Photo.

An army of grasshoppers, moving northward across Nevada, is impeding automobile traffic across the state through the hazard of slippery roads. The long, black, hard-shelled grasshoppers will find little to destroy unless they move westward. Baffles, eighteen inches high, as shown above, are erected along the course of the invasion. Poison spread in the center of the mass kills the insects before they can escape.

Now, Wegener pointed out that the earth's crust is composed of two layers, the outer one being lighter and thinner, or less deep, than the oceans. Thus the continents are great concave rafts of this outer crust, resting on the second layer, like pieces of peel on a half-peeled orange. Wegener suggested that our earth originally had a complete skin of this outer layer, but that about half was lost by flying off into outer space and that the remainder then cracked up into big pieces and started to drift around to balance the earth, which was lopsided and wobbling. What is more, this scientist went on to show in a most ingenious manner that there is considerable evidence to support his theory.

He started by cutting out maps of the continents, and then, disregarding the oceans, he brought them together and showed that the east coast of North and South America fitted almost exactly into the west coast of Europe and Africa. The degree of junction is alarmingly perfect, as may be seen by the map. Wegener then fitted the other continents together almost equally well merely by bending them a little and swinging some of them round.

Now, should the eels have originated in the sea-filled crack between the Old and the New Worlds when they lay together, and have then developed the habit of spending their time between breeding season in the ponds and rivers of the near-by land on either side of the crack, they would have been called upon to make longer and longer journeys to their breeding grounds as the continents drifted apart, until it eventually became unfeasible for them to make the trip every year. Thus they would have to spend a longer rest period in fresh water and go less frequently to breed. By carrying this process to an extreme, moreover, it will be seen that their behavior would eventually become that which actually obtains among them today, whereby they spend their whole lives resting and storing up energy for their great adventure and then, when fully mature, set out to the ancestral grounds, now thousands of miles away, where the eggs are laid.

The effort now entailed so entirely exhausts them that they never survive or return. Their behavior is, in fact, strong supporting evidence for the astonishing theories of Wegener.

Thus we see that the mystery of migration is a complex problem. It is a varied process, probably of many diverse origins, now maintained by many different recurrent causes and unified only by its object and result—namely, survival. It is a major life process of the whole animal world, and without it a great part of our earth's animal life would probably have long since become extinct. It will remain forever an impressive spectacle to watch, but there is nothing more mysterious about it than about any of the other great processes of nature.

Rations for Bobwhite Quail

(Continued from page 11)

Experiment Two. The five most promising mash mixtures used in Experiment One were fed again in Experiment Two. In addition three mixtures found previously to have been excellent for Ring-necked pheasants (Stadelman and associates, 1944), and one new granular type mash were added.

Results for Experiment Two are summarized in Table 6. Although the groups of birds as a whole were more uniform in this test, there was, as in Experiment One, a distinct segregation on the basis of superiority as determined by the measurements made. Bird quality as acertained by size, apparent health, plumage condition, freedom from injury, etc., was an added measurement of differences between the rations used in Experiment Two.

Mash mixtures 6, 7, 10, and 11 again gave reasonably good results for late-hatched chicks. However, the results were not equal to those secured with pheasant mixtures 12, 13, and 14 fed to groups 15, 16, and 17. While differences in growth, feed usage, and number and quality of birds reared were negigible among the latter three groups, the mortality of group 17 was distinctly the lowest. Mixture 14, fed to this group, had, when used for pheasant chicks hatched in May of the same year, given an exceptionally low mortality, 1.6 per cent to 6 weeks.

It may be observed, Tables 4 and 5, that this superior mixture was simple and modern. It contained 40 per cent of soybean oil meal, the protein level was approximately 29 per cent, and the calcium and phosphorus levels were 1.31 and .84 per cent, respectively, this giving a Ca:P ratio of 1.56:1.

Groups 20 and 21, fed mash mixtures 6 and 7 without the moist Maxco supplement, were inferior to groups 13 and 14 fed the same mashes but given the supplement in addition. However, the only important difference was in early mortality. This was apparently due to the chicks getting mash in their eyes, the eyes then becoming pasted shut, a condition which stimulated eye-picking by the more vigorous birds. This condition lends weight to the suspicion that the Maxco feeding may be of more value mechanically than nutritionally.

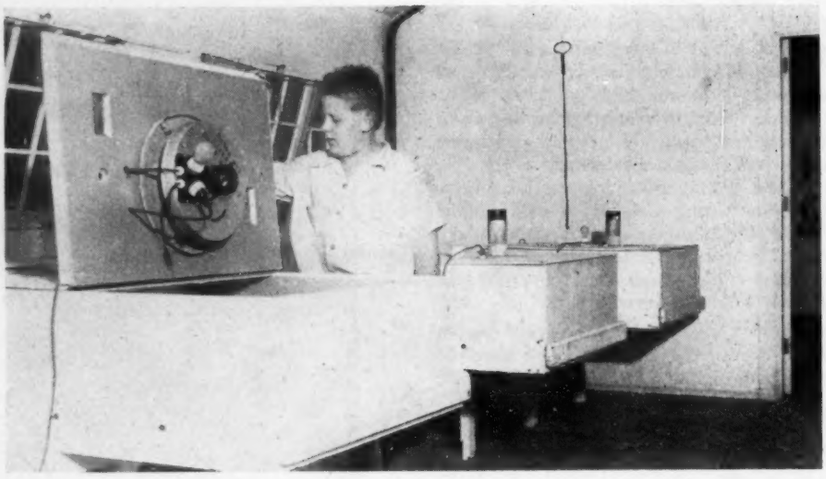


Figure 3. Electric brooder heating assembly used for each group of 100 quail chicks.

Mixture 3, fed to group 19, again gave inferior results. Granular mixture 15, fed to group 19 gave moderately good growth and livability and showed a feed usage comparable to that of the "kernel" pens.

Discussion and Practical Applications

It would be a waste of time to analyze statistically the results secured in the two experiments reported. Valid, ordered information about bobwhite quail chicks is still so limited and management procedures with sizeable groups of chicks are so complex and varied that results are influenced by too many environmental factors to permit accurate analysis. However, sufficiently large populations were used in these tests (100 chicks per experimental group; 200 per treatment group as reported in the tables) to give ample evidence by means of which the mash mixtures studied can be easily classified as poor, fair, and good.

It would be manifestly unfair to compare the rations used in Experiment One with different rations used in Experiment Two. It would also be objectionable and faulty to attempt a severe comparison between results from the same mash mixtures used in both tests. It is justifiable to examine closely comparative results secured with different groups of chicks hatched at different periods and brooded in different pens but fed mash mixtures based on the same formula. Such results may also be compared with similar results obtained with other mixtures fed in conjunction with these basal mixtures fed in each experiment.

In line with this reasoning mash mixtures 6, 7, 10, and 11, fed to groups 6 and 13, 7 and 14, 10 and 12, and 11 and 22 respectively, serve as bases for comparison of the fifteen experimental mixtures studied. Because of the difficulty experienced in feed usage, comparisons discussed here are limited primarily to growth and mortality supplemented by bird quality as measured in Experiment Two.

In Experiment One, the groups fed rations 6, 7, 10, and 11 were so much better than all other groups in both weight and livability that there is no doubt of their superiority. As a matter of fact, not a single 100-chick group on the other rations averaged in weight within 4 grams of the smallest average in any similar group fed these four best rations. The smallest mortality in any 100-chick group fed the other rations was 25 per cent, the greatest in any of the 100-chick best ration groups being 14 per cent.

In Experiment Two, in which the six poorest rations of Experiment One were replaced, mixtures 6, 7, 10, and 11 again gave reason-

TABLE 1—COMPOSITION OF MASH MIXTURES USED IN EXPERIMENT ONE (In Pounds)
(To each was added: salt, 0.5 lb.; cod liver oil (400 A.O.A.C.), 0.25 lb.; and $MnSO_4$, 0.025 lb. Each ration totalled 100.275 pounds.)

Group	1	2	3	4	5	6	7	8	9	10	11
Ground yellow corn	20.0	20.0	15.0	30.0	33.5	11.2	17.5	26.0	25.0		
Wheat bran	15.0	5.0	15.0	15.0	15.0	15.0	10.0	10.0	10.0		
Wheat flour middlings	12.5	...	15.0	15.0	15.0	12.5	10.0	10.0	10.0		
Ground oats	10.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
Alfalfa leaf meal	5.0	10.0	5.0	7.5	7.5	5.0	5.0	5.0	7.5		
Dry skim milk	12.5	10.0	9.5	2.5	7.5	12.5	8.0	10.0	5.0		
Soybean oil meal	...	6.5	15.0	10.0	...	19.5	12.0	5.0	12.0		
White fish meal	11.0	10.0	10.0	2.5	5.0	2.75	...	5.0	10.0		
Menhaden fish meal	...	...	...	...	...	...	15.0	...	...		
Meat scraps (50% protein)	...	...	...	2.5	5.0	11.05	...	11.5	5.0		
Meat scraps (55% protein)	...	5.0	5.0	...	...	...	12.0	...	...		
Meat scraps (65% protein)	13.5	...	...	...	...	...	...	...	...		
Ground limestone	...	...	...	1.0	1.0	...	...	2.0	2.0		
Oyster shell flour	...	3.0	...	...	...	...	...	...	...		
Steamed bone meal	...	...	...	1.0	...	...	...	...	...		
Ground wheat	...	15.0	...	...	...	...	...	...	...		
Corn gluten meal	...	...	...	...	...	...	...	5.0	...		
Riboflavin concentrate	...	...	...	2.5	...	...	...	...	...		
Dried brewers' yeast	...	...	...	...	...	...	...	...	3.0		
										Commercial "Kernel" mixture Guaranteed analysis—30% protein	Commercial "Kernel" mixture Guaranteed analysis—26% protein

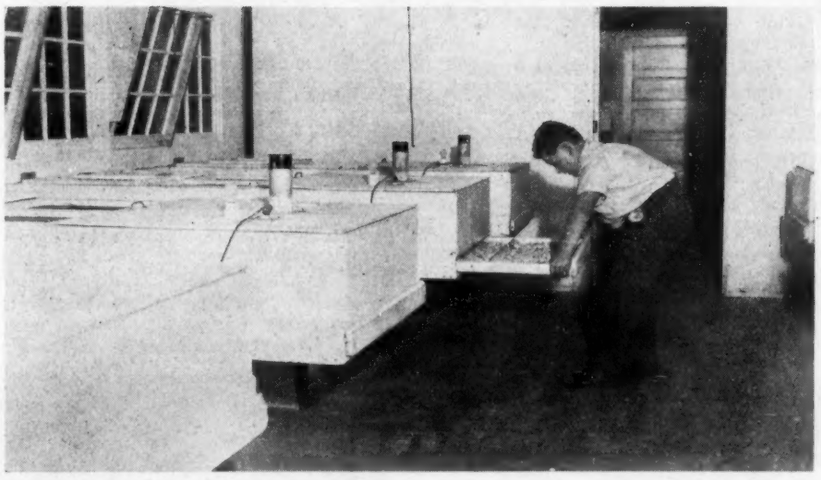


Figure 4. Brooder pens; the droppings pan, bedded with shavings, of one pen is partly withdrawn from under the wire floor.

quail feeds but did not measure up to mixtures 14, 12, and 13. Mixtures 10, 6, and 15 were also satisfactory.

4. Mixtures 1, 2, 3, 4, 5, 8, and 9 were definitely unsuited for quail.

With the exception of 5424 chicks in two groups in which the mortality, definitely due to experimental management procedure and inexperienced brooder attendants, was 27.4 and 25.44% respectively, the remaining 15,759 chicks started completed the six-week brooding period with a mortality of only 1788 birds or 11.34%. The results obtained from late hatched birds merits special note. The last four hatches of the season totalled 8,190 chicks hatched July 6th to July 27th. Of these 3,898 were brooded in the brooder house shown in Figure 1,—3,629 in another big brooder house, and 663 in colony houses. These chicks completed the six-week brooding period with a total mortality of 854 birds or 10.43%.

(Footnote prepared by V. T. Warfel, Superintendent of Fisher State Game Farm.)

(Continued on page 30)

TABLE 2—CHEMICAL ANALYSES OF MASH MIXTURES USED IN EXPERIMENT ONE (In Percentages)

Group	Maxco	1	2	3	4	5	6	7	8	9	10	11
Moisture	8.06	8.53	7.80	8.23	8.56	8.90	9.11	8.07	7.98	8.99	9.01	8.14
Ash	2.68	13.15	13.89	11.89	8.75	9.90	9.80	8.68	11.47	13.91	7.98	9.95
Ether Extract	3.36	5.68	4.36	4.76	4.64	4.94	4.30	5.58	4.84	4.65	6.23	7.53
Protein	23.69	23.69	19.19	23.38	18.69	17.19	28.00	31.94	23.13	21.25	24.88	27.56
Crude fiber	1.46	5.60	5.84	5.98	6.87	6.04	5.98	5.07	5.46	5.76	4.93	4.57
Calcium	.29	3.56	4.07	3.17	1.77	2.34	2.08	1.81	3.19	3.86	1.85	2.27
Phosphorus	.57	1.22	1.60	1.35	1.08	1.24	1.21	1.25	1.54	1.28	0.95	1.20
Managnese	.0034	.0103	.0088	.0100	.0110	.0114	.0127	.0133	.0116	.0117	.0103	.0091
Ca:P ratio	.51:1	2.92:1	2.54:1	2.35:1	1.64:1	1.89:1	1.72:1	1.45:1	2.07:1	3.01:1	1.95:1	1.89:1

ably good results. However, they did not compare favorably with mixtures 13, 14, and 15 in either growth, mortality or number of good birds reared. They were again distinctly better than mixture 3 and mixtures 6 and 7 fed without scalded Maxco, but were no better than mixture 15. Group 13, fed mixture 6, was more deficient on all counts than would be expected. This was due to definitely poorer growth and higher mortality in pen 13b. No reason is known for this condition.

Summary

Four thousand four hundred day-old quail chicks were used to evaluate 15 mash mixtures. On the basis of all available evidence, it may be concluded that: 1. Mash mixture 14, fed to group 17, was the best feed offered as measured by weight, livability and number or per cent of good birds reared to 6 weeks of age.*

2. Mixtures 12 and 13, fed to groups 15 and 16, were about as good as mixture 14 in growth, feed usage, and number of good birds reared, but somewhat poorer in mortality results.

3. Mixtures 7 and 11 were satisfactory

* Since these experiments were completed the Pennsylvania Game Commission has reared many thousands of quail on ration 14. In 1944, 17,883 quail were raised with a total brooder mortality of only 15.31 per cent to six weeks of age. This was not only the lowest quail mortality for any brooding season on the Fisher State Game Farm, but the quality of the birds at six weeks, based on vigor, uniformity, and good feathering, was the best.

TABLE 3—BODY WEIGHTS, FEED USAGE AND MORTALITY, BY TREATMENTS; EXPERIMENT ONE

Group No.	Mash No.	Average weight in grams at Day-old	Average weight in grams at 6 weeks	Feed usage in pounds per 100 chicks to six weeks	Mortality in per cent to six weeks
1	1	6.52	65	53.5	51
2	2	6.52	52	45.7	59
3	3	6.10	76	58.6	33
4	4	6.24	61	48.8	29
5	5	6.10	49	37.2	53
6	6	6.24	89	63.6	12
7	7	6.38	96	63.1	12
8	8	6.38	70	53.0	46
9	9	6.31	61	49.5	29
10	10	6.24	86	48.2	11
11	11	6.24	87	46.7	7

TABLE 4—COMPOSITION OF MASH MIXTURES USED IN EXPERIMENT TWO (In Pounds)
(To each was added: salt, 0.5 lb.; cod liver oil (400 A.O.A.C.), 0.25 lb.; and $MnSO_4$, 0.025 lb. Each ration totalled 100.275 pounds)

Group	12	13	14	15	16	17	18	19	20*	21*	22
Mash Mixture	10	6	7	12	13	14	15	3	6	7	11
Ground yellow corn	Commercial "Kernel" mixture Guaranteed analysis—26% protein	11.2	17.5	12.5	16.5	9.5	...	15.0	11.2	17.5	Commercial "Kernel" mixture Guaranteed analysis—30% protein
Yellow cornmeal (bolted)		...	...	...	...	...	29.5	...	...	...	
Wheat bran		15.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0	10.0	
Wheat flour middlings		12.5	10.0	10.0	10.0	10.0	...	15.0	12.5	10.0	
Ground oats		10.0	10.0	10.0	10.0	10.0	...	10.0	10.0	10.0	
Alfalfa leaf meal		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Dry skim milk		12.5	8.0	...	...	...	10.0	9.5	12.5	8.0	
Dried whey		...	...	10.0	5.0	5.0	...	...	...	...	
Soybean oil meal		19.5	12.0	30.0	25.0	40.0	20.0	15.0	19.5	12.0	
Corn gluten meal		...	...	...	...	...	5.0	...	...	...	
White fish meal		2.75	...	...	...	...	5.0	10.0	2.75	...	
Menhaden fish meal		...	15.0	4.0	3.0	2.0	...	...	...	15.0	
Meat scraps (50% protein)		11.05	...	8.0	12.0	3.0	10.0	...	11.05	...	
Meat scraps (55% protein)		...	12.0	...	...	...	...	5.0	...	12.0	
Ground limestone		...	...	...	...	1.0	...	...	...	...	
Steamed bone meal		...	...	...	...	1.0	...	...	...	...	
Dried brewers' yeast		...	...	...	3.0	3.0	...	...	...	...	

* No scalded Maxco feeding was practiced with groups 20 and 21.

Rations for Bobwhite Quail

(Continued from page 29)

TABLE 5—CHEMICAL ANALYSES OF MASH MIXTURES USED IN EXPERIMENT TWO (In Percentages)

Group	12	13	14	15	16	17	18	19	20*	21*	22
Mash Mixture	10	6	7	12	13	14	15	3	6	7	11
Moisture	10.02	10.06	10.06	10.15	10.42	10.35	9.74	9.56	9.86	9.80	9.27
Ash	7.90	9.51	8.62	7.54	8.24	7.40	9.66	12.06	9.34	8.93	9.56
Ether Extract	6.31	3.73	5.68	4.16	4.33	2.91	3.42	4.30	4.68	6.05	6.49
Protein	24.88	25.44	29.94	27.44	27.31	28.94	25.31	21.56	25.81	28.13	28.69
Crude fiber	4.77	6.60	5.70	6.75	6.80	7.28	5.01	6.16	6.70	6.69	4.26
Calcium	1.79	2.16	1.96	1.22	1.72	1.31	2.58	3.25	2.09	2.00	2.31
Phosphorus	0.86	0 92	0.94	0.84	0.93	0.84	0.87	0.90	0.89	0.88	0.87
Manganese	.0113	.0102	.0108	.0100	.0124	.0110	.0084	.0126	.0102	.0126	.0108
Ca:P ratio	2.08:1	2.35:1	2.09:1	1.45:1	1.85:1	1.56:1	2.97:1	3.61:1	2.35:1	2.27:1	2.66:1

* No scalded Maxco feeding was practiced with groups 20 and 21.

TABLE 6—BODY WEIGHTS, FEED USAGE, MORTALITY AND PERCENTAGES, GOOD BIRDS REARED, BY TREATMENTS; EXPERIMENT TWO

Group No.	Mash No.	Average weight in grams at Day-old	Average weight in grams at 6 weeks	Feed usage in pounds per 100 chicks to 6 weeks	Mortality (per cent to 6 weeks)	Good birds at 6 weeks No.	Good birds at 6 weeks Per cent
12	10	6.38	78	46.4	31	131	94
13	6	6.24	72	62.5	41	93	79
14	7	6.38	84	61.8	30	136	95
15	12	6.52	88	64.7	19	162	99
16	13	6.52	91	66.0	18	162	95
17	14	6.52	91	66.3	13	168	97
18	15	6.24	79	51.7	33	115	91
19	3	6.24	63	65.4	55	51	57
20	6*	6.52	78	64.8	52	90	92
21	7*	6.24	75	63.7	44	98	88
22	11	6.24	84	51.7	25	142	97

* No scalded Maxco feeding was practiced with groups 20 and 21.

Severe winters deplete the ranks of Bobwhite.

Literature Cited

LeCompte, E. L. 1931. Propagation of bobwhite quail by electricity. Trans. of the 18th Amer. Game Conf.: 147:152.

Handley, C. O. 1932. Bob white quail breeding progress—1932. Trans. of the 19th Amer. Game Conf.: 241-247.

MacNamara, L. G. 1932. Latest developments at the Game Conservation Institute. Trans. of the 19th Amer. Game Conf.: 304-310.

MacNamara, L. G. 1933. Recent advances in quail breeding. Trans. of the 20th Amer. Game Conf.: 192:198.

Petty, U. N. 1934. Battery brooding bobwhite chicks. Trans. of the 21st Amer. Game Conf.: 224-225.

Norris, L. C. 1935. Nutrition of game birds. New York State Conserv. Dept., Ann. Rep. (1935) 331-338.

Nestler, R. B., W. W. Bailey, and H. E. McClure. 1942. Protein requirements of bobwhite quail chicks for survival, growth, and efficiency of feed utilization. Jour. of Wildlife Management 6:185-193.

Nestler, R. B., L. Llewellyn, and M. Benner. 1944. Wartime diet for growing Bobwhite quail. Jour. of Wildlife Management 8:211-218.

Stadelman, W. J., R. R. Murphy, E. W. Callenbach, and R. V. Boucher, 1944. Satisfactory wartime rations for pheasant chicks. Jour. of Wildlife Management 8:56-60.

The Pen Is Mightier

(Continued from page 17)

It is hoped that when next fall approches, many other associations and schools will work together on the "Hunt Safely" idea. The more it is kept in the limelight, the more safety-minded people are going to become. Let's keep the ball rolling.

By Gus Clinos

Donald Sisler, thirteen, likes to go hunting with his .22 rifle. His Uncle, Paul Sisler, thirty-three, likes to play practical jokes. The uncle hid in some bushes and wailed like a wildcat. Donald fired. Uncle Paul will recover, physicians say.

This incident is typical of the defeats suffered by General Safety on the field of hunting. The situation is serious. The only way to cut down on Major Accident's victories is to supply the hunters with a secret weapon. This weapon is education. Through education hunters can take the offensive against Major Accident. The question is, who is to take up the task of education? There are many hunting and sportsmen's clubs all over America. Through these clubs, hunters could be equipped with the knowledge it takes to be a safe hunter. It's up to you, hunters. You can help save lives and defeat Major Accident.

By Dorothy Luciana

Bright red jackets, newly oiled guns and 1944 licenses are ready and hunting season opens with a loud bang. Beware, rabbits, quail, ducks, deer and *hunters!* Along with all hunters lurks a dreaded enemy. It takes many lives every year, and only you can step in its way and kill it!

Who or what is this enemy that I speak of? Just plain carelessness. It doesn't sound like much of an enemy, does it? Yet this three syllabled word brings tragedy into gay happy homes every year. Until you can look yourself in the eye and say, "I hunt with safety," the hunter's foe will continue to do its dirty work.

So, when you take down your gun from the attic for that long awaited hunting trip, remember that carelessness spells *danger* while safe hunting means a wonderful duck dinner!

By David Eckhardt

Look before you shoot! That sounds sensible, but just how many hunters obey this basic rule of good hunting? It would be a good thing if more of them did. Many are the hunters, stalking some prey, who upon seeing a slight movement in the undergrowth, fire and unwittingly hit their buddies. This has happened too often to joke about and it happens again and again. Every hunter, green or veteran, should review the game laws and the various sportsman's codes before he goes hunting each fall so as to avoid such accidents. To be a good sportsman, one should always remember this basic rule to a safe and enjoyable quest. Take no chances! Look before you shoot.

HARE HUNTIN'

IF the deer herd in the northern forests of Pennsylvania is ever reduced commensurate with its food supply, conditions for snowshoe rabbits and other forest small game will be improved considerably, and they will increase accordingly. This should be especially true of hares, which have only been holding their own, if you can call it that, in recent years. At one time they were obviously plentiful, even based on field officers' estimates of the bag which experience has proved are usually conservative. As a matter of information let's look at the record since 1930:

Year	*Number*
1930	20,602
1931	26,245
1932	19,890
1933	23,139
1934	17,995
1935	8,659
1936	Closed
1937	2,240
1938	2,120
1939	Closed
1940	Closed
1941	Closed
1942	6,019
1943	3,716

Hunting pressure in earlier years may have resulted in a gradual depletion of these animals but it doesn't seem logical in view of the fact that the annual kill was so consistent for about five or six years running beginning with 1930. The primary factor then, aside from predation which plays a certain part, is food. The hare has some protection against its enemies, particularly in winter.

He seems to have a bit of chameleon in his nature. In the summer he is mostly brown, matching his surroundings. In early autumn he is still mostly brown. In winter in our latitude some individuals turn white, while others remain brown or only partly change. However, that's beside the point. They are still darn good small game animals worthy of any chase and good eating in the bargain.

And can he run? And how! That's why he's still "in the running" here in Pennsylvania. There are only two groups of snowshoes—the quick and the dead. The ones you see moving belong to the former class.

A member of the hare family, much larger than the cottontail, with longer legs, the snowshoe or ghost rabbit needs all his extra limb power. Being a hare he does not hole up, but depends upon speed, cover, and natural cunning to protect him from his enemies. Skilled in all the tricks of the trade, he will run as long as a dog will run him, performing hairpin turns, back-tracking, sudden side jumps of great length, and as nice an assortment of elusive tactics as you could ask for to test your hounds.

When first jumped, and unless pushed too fast by the trailing hounds, the hare usually makes one or two complete circles. If he is pursued by slow hounds his circles are usually not of great diameter, although they are generally slightly wider than those of the average cottontail. After circling, if still pursued and pushed a little, he bolts the country for a while, takes the hounds far out of hearing, and makes a wide circle worthy of a fox. If the pursuit continues and the trail is not lost, he will finally come back.

You get a real chase and a real thrill hunting snowshoes. With a pack of slow-trailing, bugle-voiced bassets, most of the baying will be within hearing, for the slow hounds bring the game around in smaller circles than do tall, fast hounds.

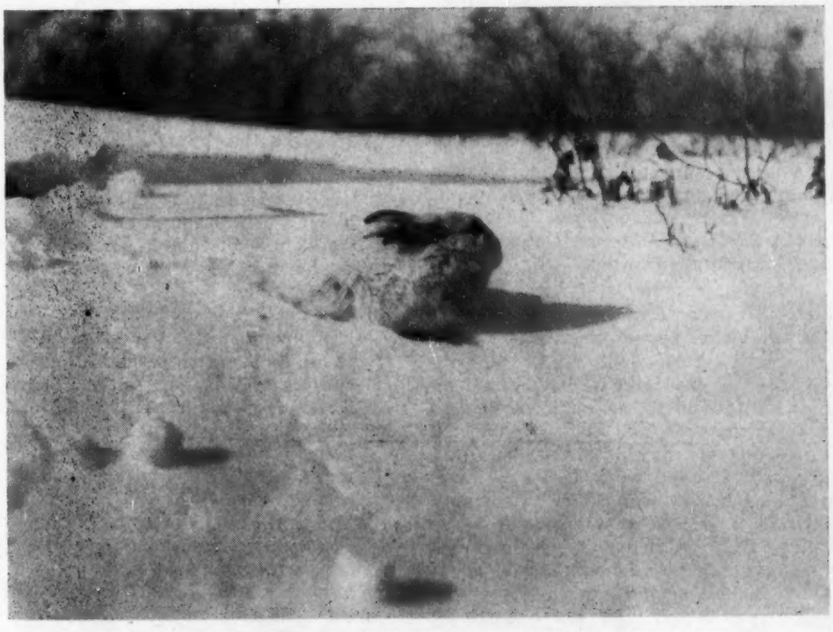
Of excellent nose, built close to the ground, careful, painstaking workers, the bell-toned bassets speak out with surety when hot on the trail. A pack of them, or even two or four, make fine music as they circle their wary quarry around to the waiting hunter.

Paul M. Penney proudly displays a 6-point 175 pounder killed in Elk County during the 1944 season.

The snowshoe is easier to run than to eat. A young one that is fairly fat, and fairly fat is about as fat as these rabbits ever get, is fair eating when fried to a nice brown. But the old ones are just a shade more tender than harness leather and taste a great deal like an old saddle.

The snowshoe is also easier to chase than to shoot, despite his great size and apparent bulk. In the open, broadside, he makes a fair mark if he runs at a regular and reasonable speed, and really gets out into the open for any considerable distance at the right range. More often than not he doesn't. He is a woods rabbit and likes cover.

When the hare wants them to, his great legs take him out of range in nothing flat. He can run at more speeds than almost anything of his size and shape. He has more gears and speeds than a big truck, and he can get away from a sitting start faster than anything short of a grouse. All his life he has dodged around fallen trees and rocks, and he is an artist at getting behind them. His great speed at various levels and in various directions usually leads the embryo hunter to shoot where the rabbit was a second ago. Hence his long life.



He seems to be a chameleon in nature.

The frigate bird, also known as the man-of-war, lives principally on fish but they seldom catch their own; they take them forcibly from other fisher-birds.

Baby sea lions learning to swim gurgle and blow very much like a human baby in a bathtub.

Wildlife Stamps for 1945

Realizing the truth of the old adage, "In union there is strength," the Tarentum District Sportsmen's Club, Inc. has set a membership goal of 1,000 for 1945. Last year the club reported 644 members.

The Tarentum Club, one of the oldest sportsmen's clubs in the State, is the proud possessor of its own 105 acre farm.

Keep up the good work, boys!

GIANT NEW YORK BUCK HIGHLIGHTS RECORD DEER SEASON

The crowning event of New York's most successful deer season, in which a record of 26,305 deer were taken, was the bagging of a buck that weighed 310 pounds dressed. In announcing the kill, the New York State Conservation Department estimated the animal, shot by John S. Smith, Jr. of Bergen, to weigh more than 370 pounds when alive. This would appear to top, by a substantial margin, the 316-pounder recently shot by Lester Averill of Dixfield, Maine.

Like Sir Galahad, who, after searching the world for the Holy Grail found it right at home, Charles H. Mundis of York returned from an unsuccessful week of deer hunting in Clinton County and killed a seven-point buck in the Forge Hills, only two miles from his home. The deer, killed on December 14, weighed 115 pounds drawn.

William Bugar of Rock Run has his own ideas about virtue being rewarded. He did not take time off from his vital job as a crane-runner at the Lukens Steel Company plant at Coatesville to go deer hunting in the western part of the State, as he had wanted to do. He stayed on the job. And when he was finished work at 3 o'clock he drove out to a spot near Sandy Hill where he hoped he might see some game.

He did. Only an hour after he had left work, Bugar saw an 8-prong buck about 100 yards distant, and dropped it with one shot. He was home with his bag before dark.

City Slickers

(Continued from page 7)

Brought ashore and taken by truck to be released in Wayland, Mass. woods.

Boston, Mass., Oct., 1934—Yellow-breasted chat, one of the rarest birds to be seen in Massachusetts, flew into an office window on Milk Street (the heart of Boston's financial district) to drop exhausted. Was revived and released from the same window, whence it flew off none the worse. A warbler, rare in Massachusetts, in the midst of one of Boston's busiest sections!

Boston, Mass., Early Winter, 1936—Red fox captured IN A TREE in Public Gardens. Taken to Franklin Park Zoo.

Pasadena, Cal., Oct., 1930—Buck mule deer drinking from artificial goldfish pool within 10 feet of side door of residence.

Other facts, equally extraordinary, could no doubt be cited from records in many cities from which I have no reports at hand.

All this brings about the realization that naturally shy creatures of the wild do come into man's busiest habitations, whether driven by storms, hunger, curiosity or pursuit. And the conclusion that may or may not be drawn is: if you want to see some very rare bird or extremely shy animal go to 42nd and Broadway or Broad and Market Streets rather than to remote swamps or deep wilderness woods.

The Williamsburg Sportsmen's Association, of Pennsylvania, is planning to send News Letters to its members in the Service from time to time. Of a total of 231 members for 1944, 51 of them are in the Armed Forces. Last Christmas the club sent each one a carton of cigarettes and a membership card for 1944. It felt that remembering them just at Christmas time was not enough. Many ideas were presented as to how closer contact could be made with them throughout the year and the News Letter seemed to be the best.

The Association has sent over 100 copies of these letters to its members and to non-members who are interested in hunting and fishing. It's a darn good idea and there are other Clubs that may want to do the same thing.

Answers to WHAT'S WRONG

1. Bull moose shed their antlers just after the rutting season (autumn). It takes about 4 months for the new set to become full-grown. In deep snow time, as shown in the drawing, the bull would be antlerless.
2. Nothing wrong with this one. Solitary sandpipers nest in abandoned robins' nests and rusty blackbirds' nests in spruces and tamaracks in Alberta.
3. The Rocky Mountain "goat" is not a true goat at all, but more nearly related to the antelopes and perhaps the more closely to the chamois of European Alps.
4. The falcons, of which the duck hawk is a famous representative, strike their prey with talons closed, in a "fist," after a stoop. They later catch, in mid air, the dead or stunned victim as it plummets downward.

THE FAMILY OF A. HUNTER, ESQUIRE—EPISODE NO. 42

SHUCKS, TRUDY DOESN'T UNDERSTAND ME-SHE THINKS EVERY TIME I THINK ABOUT HUNTING I GET INTO TROUBLE! I'M GOING FOR A WALK IN THE COUNTRY!
BUY WAR BONDS
OH BOY, LOOK AT THE RABBITS-BANG-BANG-IF I WERE HUNTING TODAY I'D A GOT THEM BOTH!
AND LOOK AT THE PHEASANTS-- BANG, BANG- I GOT THEM TOO!
AND, OH BOY, HERE'S WHERE I GET ME A SQUIRREL!
BOY, WHAT A DAY... I SHOT 5 RABBITS, 2 PHEASANTS, 6 SQUIRRELS AND A DUCK! AM I A MIGHTY HUNTER?
SO! YE SHOT ALL THAT, DID YE?
HUH?
SO, HUNTIN' OUTA SEASON, ON PRIVATE PROPERTY, BAGGING MORE THAN THE LIMIT, AND NOT HAVING A LICENSE, EH? $100.00 FINE!
B-BUT..
WHAT? HE SHOT THEM ALL WITH A HICKORY LIMB?
PST PST
PSYCHOPATHIC WARD
STRAIT-JACKET
SO! I CAN'T LEAVE YOU OUT OF MY SIGHT A MINUTE!
-CARROLL-